CARDIOPATHIE TOXIQUE : QUOI DE NEUF DOCTEUR ?

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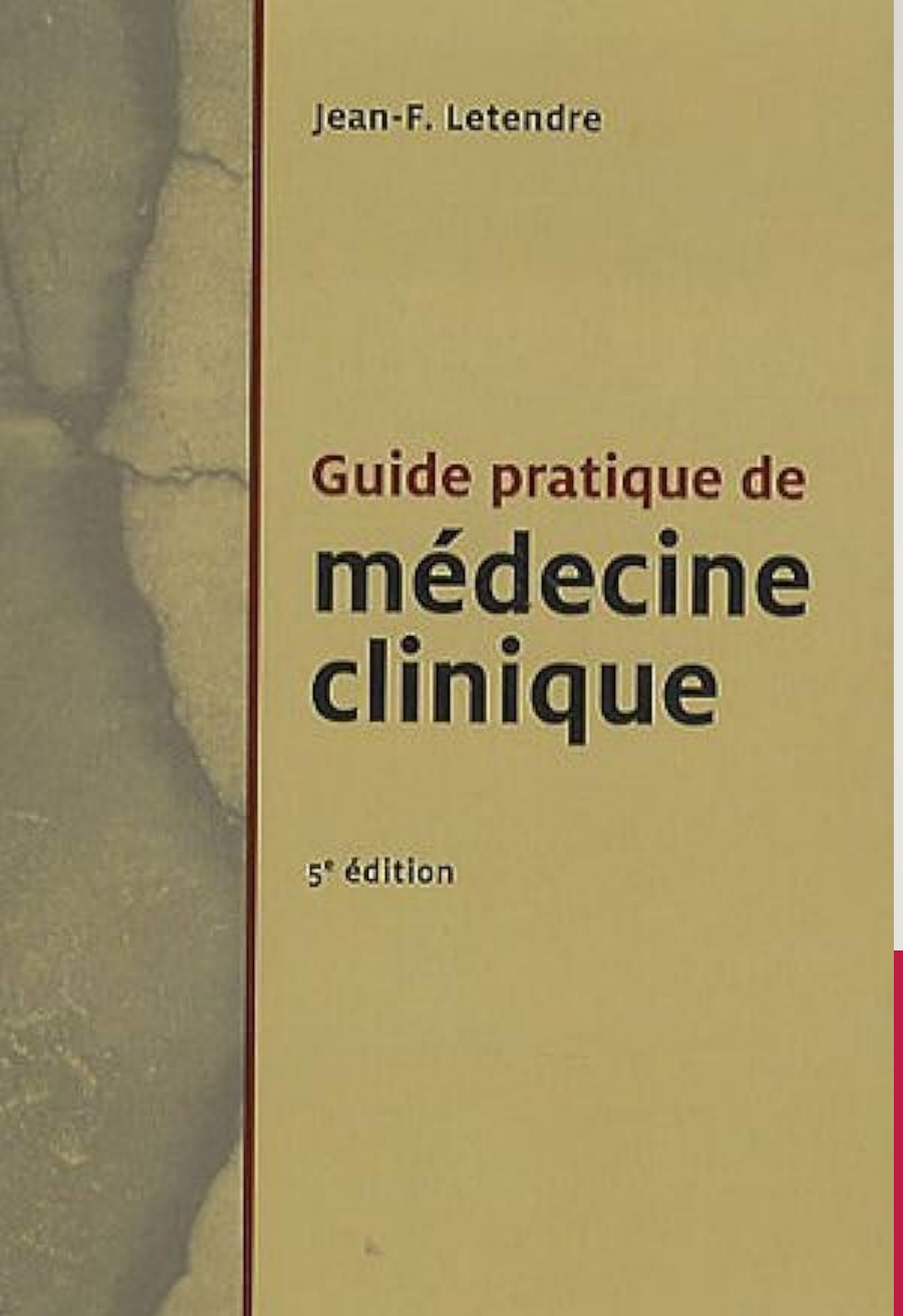
CLINICIEN , ÉCHOCARDIOGRAPHISTE , CHERCHEUR , MEMBRE DE LA CLINIQUE D'INSUFFISANCE ET DE GREFFE CARDIAQUE , DIRECTEUR DE LA CLINIQUE DE SARCOÏDOSE CARDIAQUE , PROFESSEUR ASSOCIÉ DE MÉDECINE .

INSTITUT UNIVERSITAIRE DE CARDIOLOGIE ET DE PNEUMOLOGIE DE QUÉBEC

AFFILIÉ À UNIVERSITÉ LAVAL



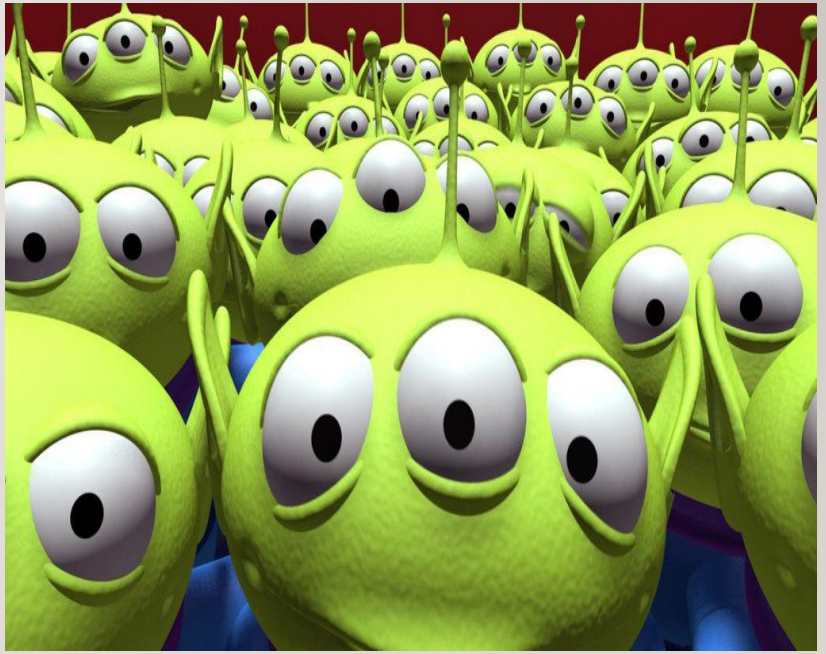
DR JEAN-FRANCOIS LETENDRE INTERNISTE

DR MARYSE MERCIER
INTERNISTE

JE N'AI AUCUN …

OBJECTIFS : CARDIOPATHIE TOXIQUE RÉCENTE , ÉVITER DE VOUS ENDORMIR , LA RÈGLE DES 3 MESSAGES :

10 ans



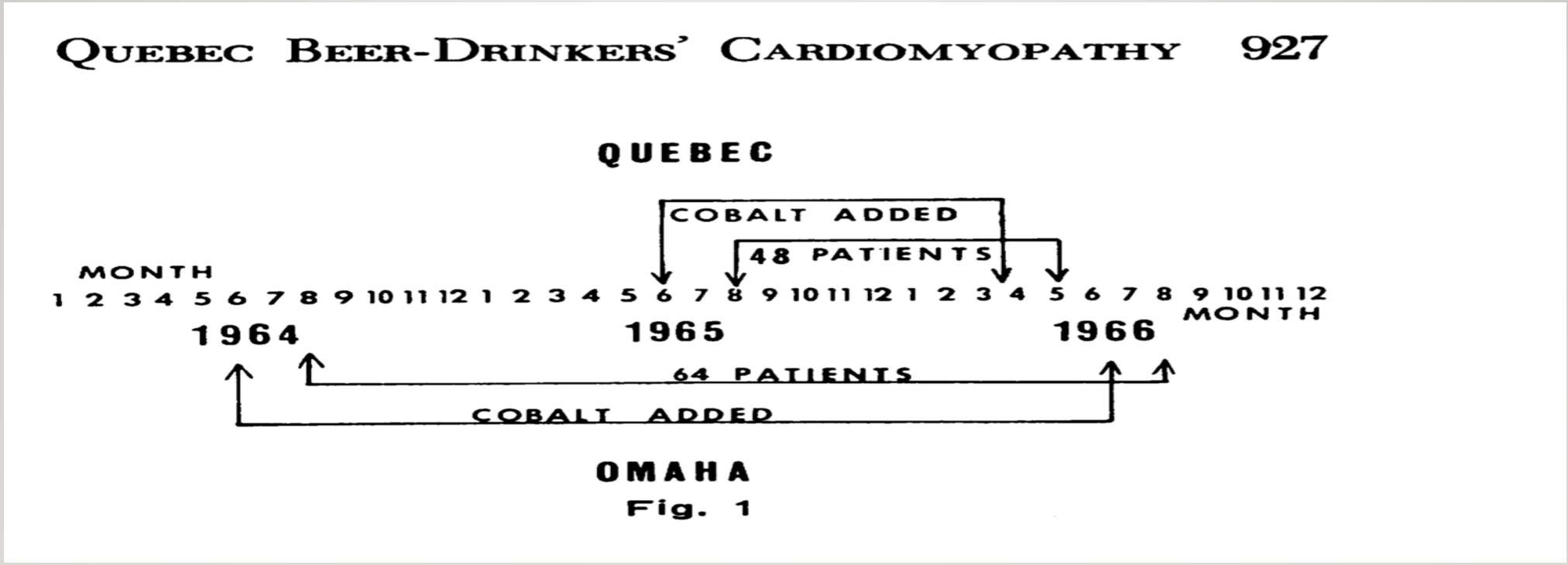
CARDIOPATHIE TOXIQUE ?

DR YVES MORIN , ÉCRIVAIN , POLITICIEN , CARDIOLOGUE …

CARDIOPATHIE TOXIQUE ?

CARDIOPATHIE TOXIQUE ?

CARDIOPATHIE TOXIQUE ? COBALT ? CAMIONNEUR , SERVEUR , TRAVAILLEUR DE LA CONSTRUCTION …



Québec beer-drinkers' cardiomyopathy: clinical and hemodynamic aspects.

Auteurs: Morin Y, Têtu A, Mercier G

Article 1969 dans Annals of the New York Academy of Sciences 1969 Jan 31; 156(1): 566-76

Publication scientifique

40%

Of the 50 cases, 20 died. In these cases, evolution was rapid, and the clinical descriptions fit the picture of Shöshin beriberi,[1] with the exception that signs of hyperkinetic circulation such as "the powerfully undulating pulsations in the heart region, the epigastrium and the neck" and the "full arterial pulse" were not seen. However, the severe dyspnea, the anxiety and restlessness, the epigastric and precordial pain, the obvious cyanosis, and the auscultatory findings were similar. The patients died quickly, usually within 24 hours, generally in shock that did not respond to vasoactive amines, steroids, digitalis, or thiamine.

Clinical and Medical Investigations

oat open access text

Review Article ISSN: 2398-5763

Alcoholic cardiomyopathy: A review of literature on clinical status and meta-analysis of diagnostic and clinical management methods

Aref Albakri*

St-Marien hospital Bonn Venusberg, Department of internal medicine, Bonn, Germany

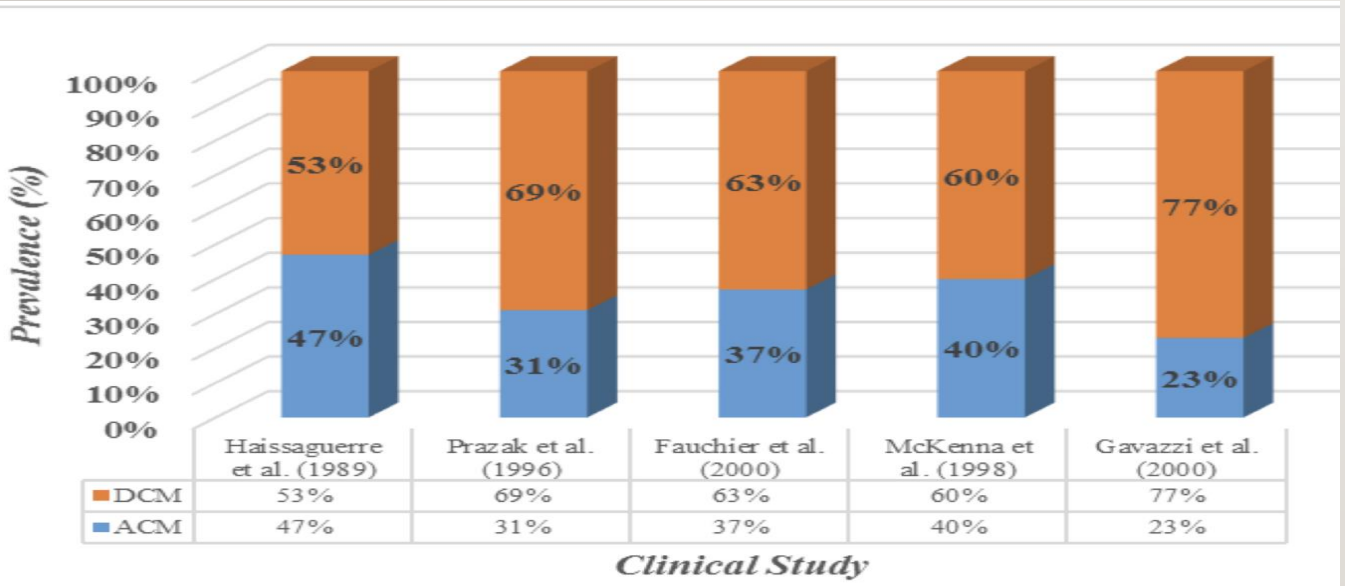


Figure 1. The Prevalence of ACM among IDCM Patients

1/3

ROH

REVIEW

Chemotherapy-Related Cardiac Dysfunction

A Systematic Review of Genetic Variants Modulating Individual Risk

S U S C E P T I B I L I T E

dicocitations.com/dictionnaire-definitions.php

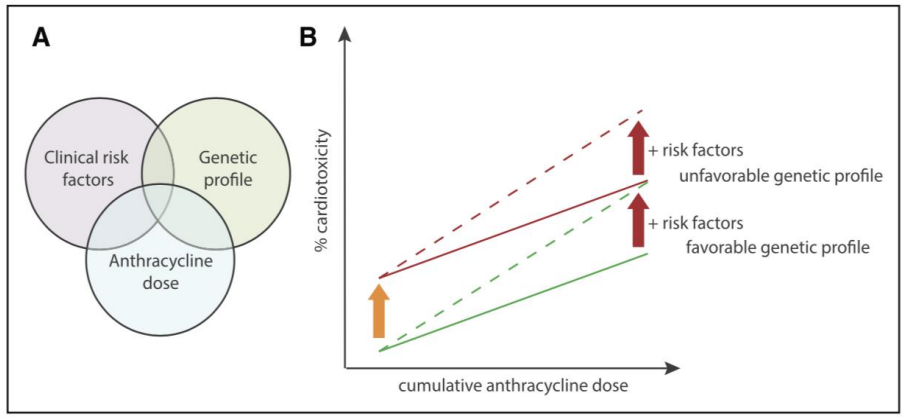
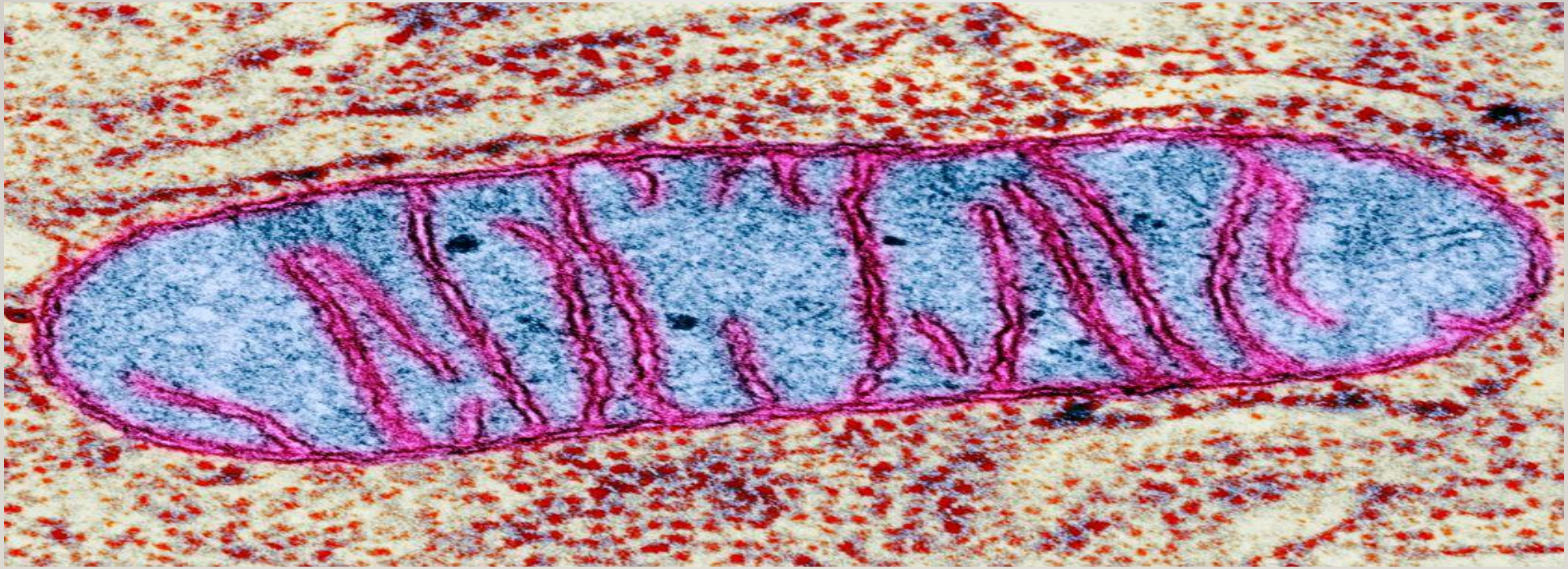
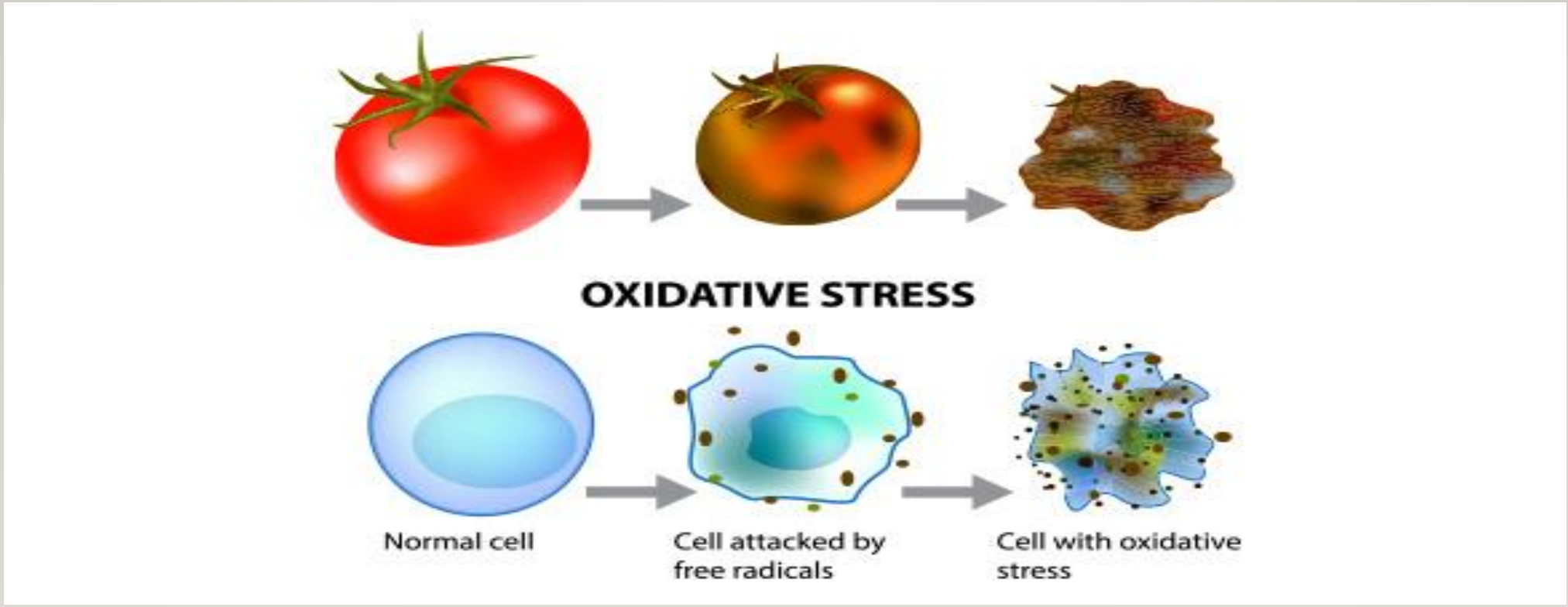


Figure 2. Relationship between genetic profile, incidence of cardiotoxicity, and tolerated cumulative anthracycline dose. **A**, The factors that influence the risk of developing chemotherapy-related cardiac dysfunction (CTRCD) can be subdivided into 3 large subgroups namely patient-related clinical risk factors, treatment-related risk factors of which cumulative anthracycline dose is the most important, and the individual genetic profile. With these 3 subgroups, the following model can be created. **B**, In this model, patients with an unfavorable genetic profile, leading to higher levels of reactive oxygen species (ROS) and topoisomerase-2β, increased accumulation of cardiotoxic anthracycline metabolites, and poorer sarcomere function, are more prone to develop CTRCD, even when treated with low anthracycline doses (indicated by the orange arrow). In the presence of other risk factors, the incidence of cardiotoxicity increases even further (red arrow). On the other hand, patients with a favorable genetic profile, leading to the protection against ROS, lower topoisomerase-2β levels, better clearance of cardiotoxic metabolites, and a stable sarcomere structure, tolerate higher doses of anthracyclines. However, in these patients, the combination of a high anthracycline dose in addition to the presence clinical risk factors also raises the risk of cardiotoxicity.

TOXICITÉ : ŒDÈME ET INCLUSIONS A/N DES MITOCHONDRIES ?



CARDIOPATHIE TOXIQUE : STRESS OXYDATIF / APOPTOSE ACCÉLÉRÉE / FIBROSE ?

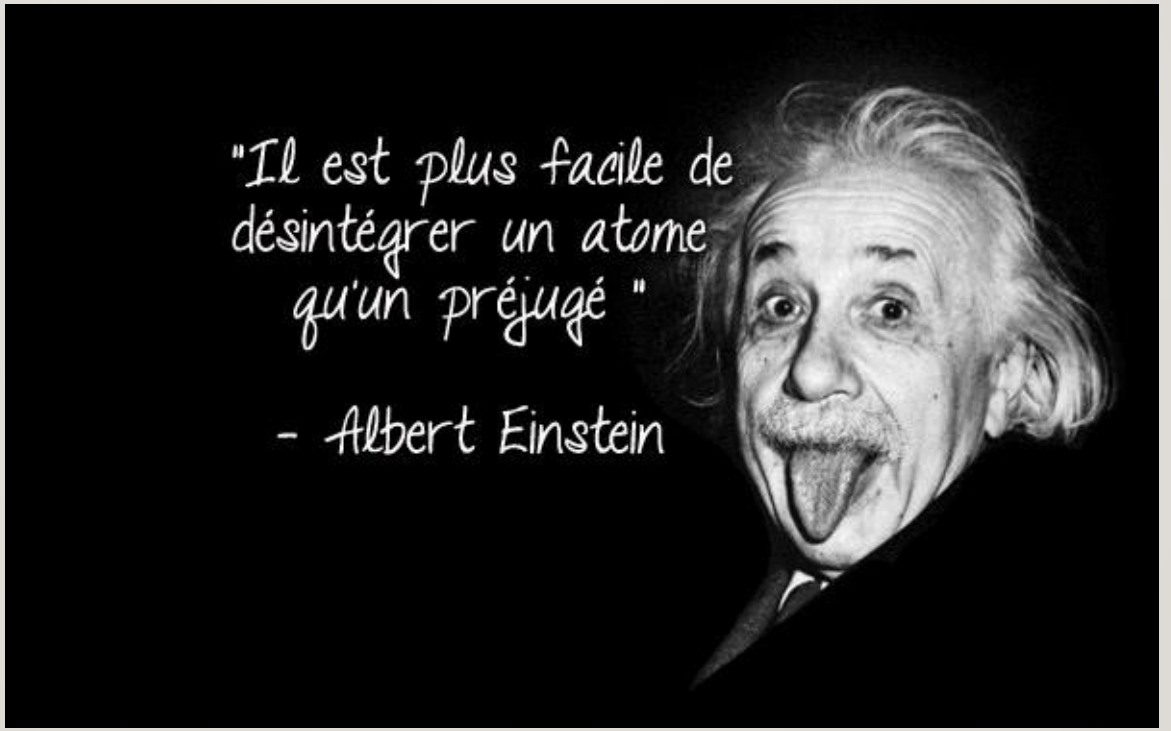


ET SI ON DÉBUTAIT PAR LA FIN ?

AGENTS TOXIQUES ?

CARDIOPATHIE TOXIQUE / FRÉQUENCE / CHOC ?

CARDIOPATHIE TOXIQUE / POPULATION / PRÉJUGÉS :



CARDIOPATHIE TOXIQUE / POPULATION : 70% SONT DES HOMMES AVEC UN EMPLOI ÂGÉ ENTRE 30-40 ANS !

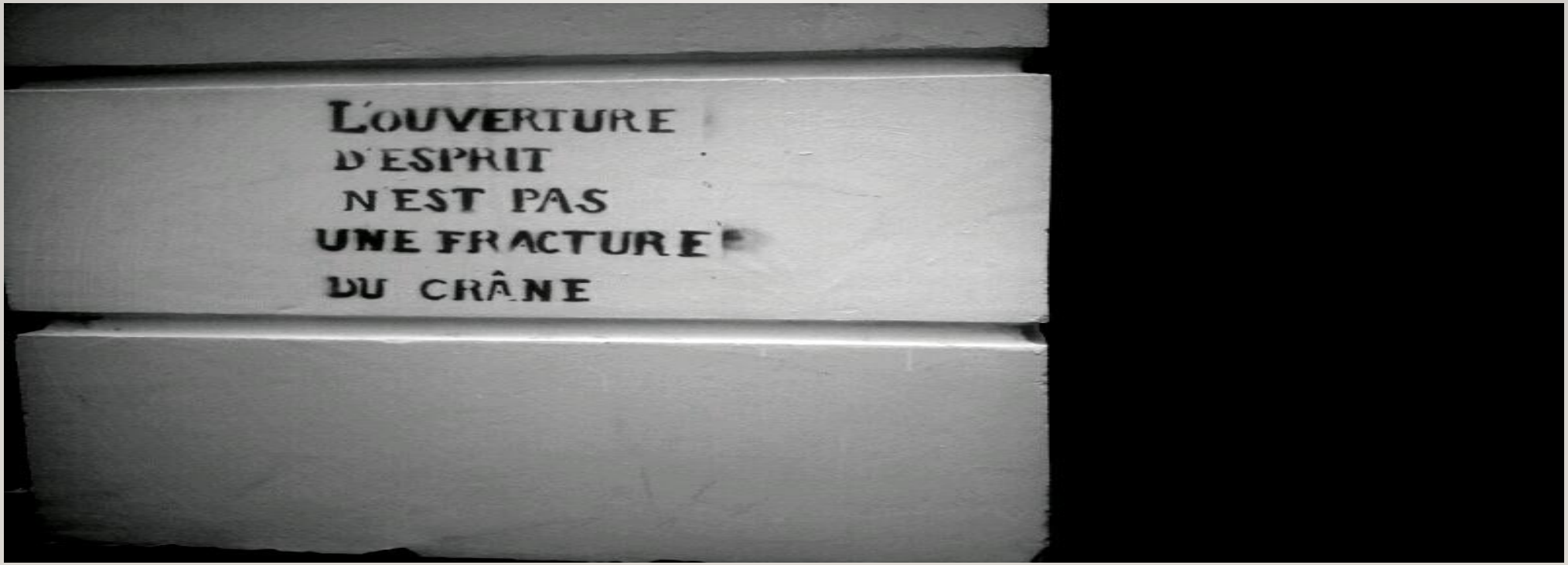
CARDIOPATHIE TOXIQUE DANS LE TEMPS ? AMPHÉTAMINES 2-5% ,

BOISSONS ÉNERGISANTES 14X CONSULTATIONS À L'URGENCE !

2010

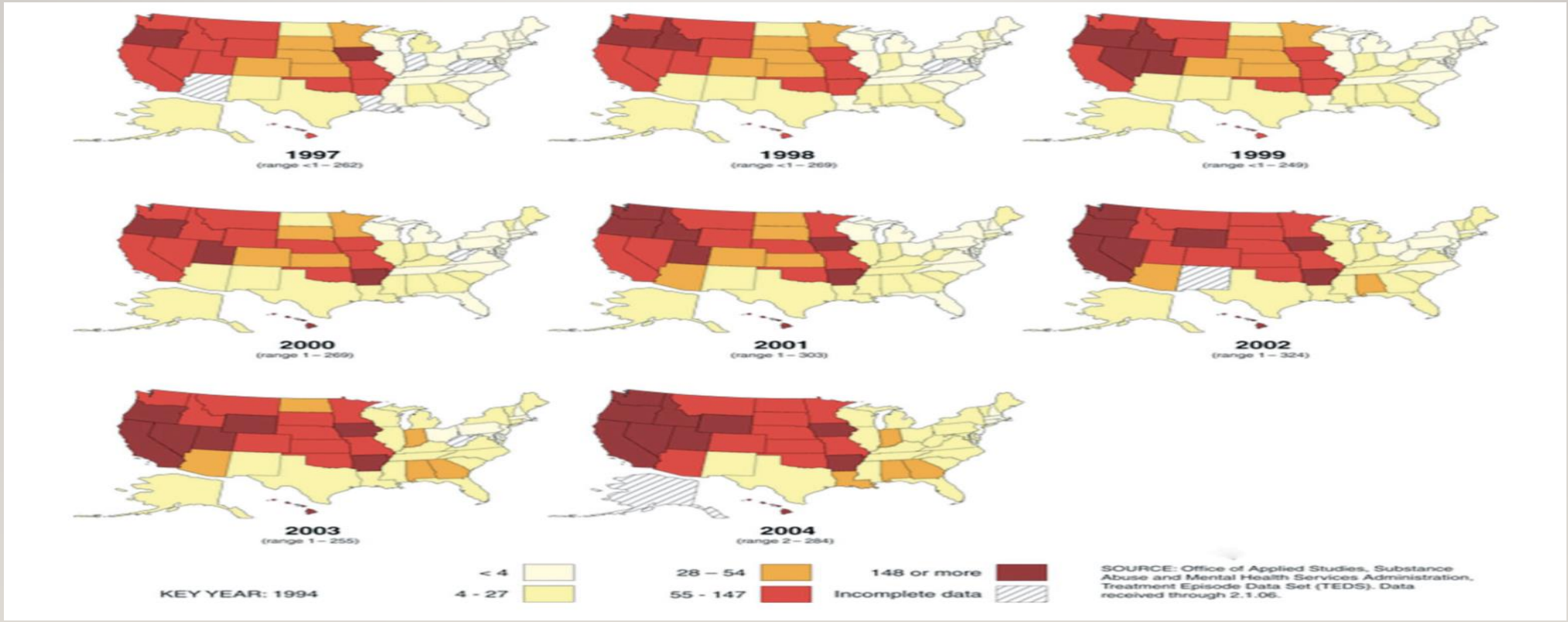
TRAITEMENTS ET SUIVI ? FRACTION D'ÉJECTION SUPÉRIEUR 35% / ARRÊT DE LA CONSOMMATION À 2 ANS DE SUIVI !

OUVERTURE POUR UNE PRISE EN CHARGE STRATÉGIQUE / TOTALE / MÉDICALE / PSYCHOLOGIQUE / SOCIALE !



C’EST UN DÉPART …

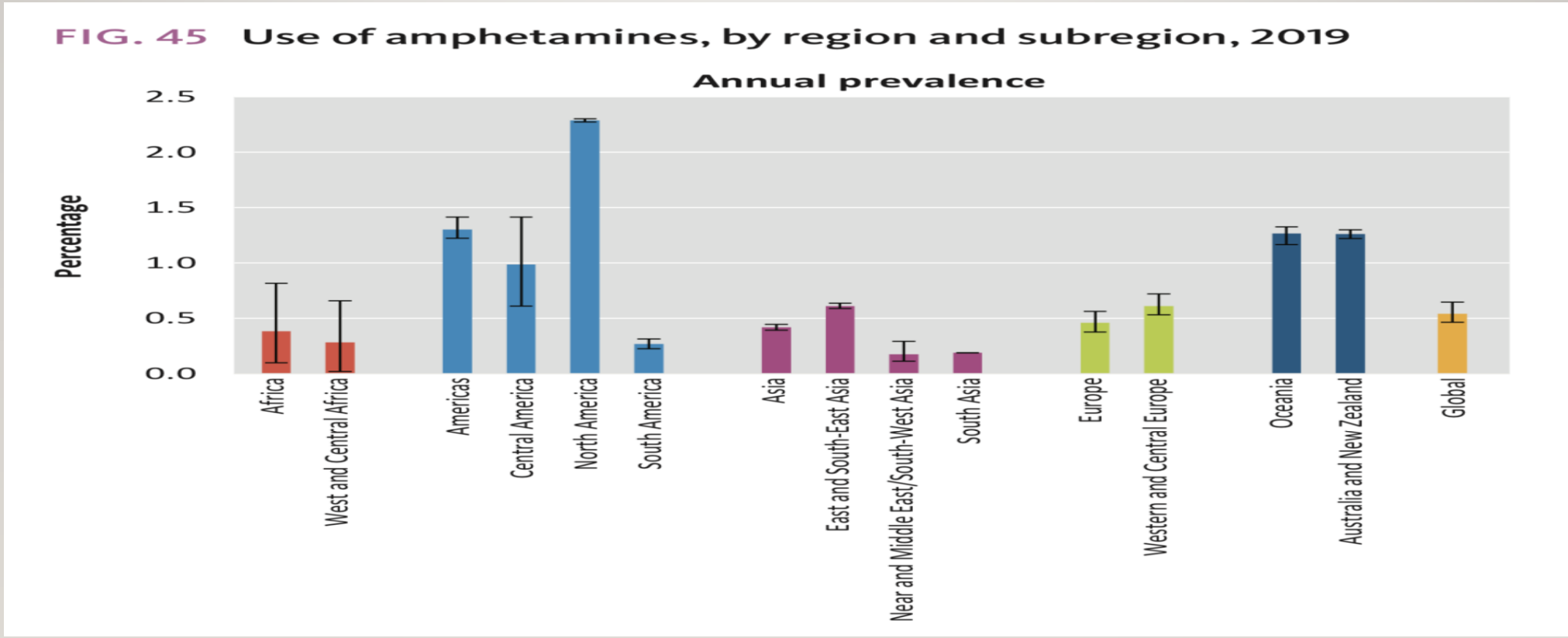
CONSOMMATION D'AMPHÉTAMINE : TAUX ADMISSION PAR 100 000 HABITANTS (50 /150 PATIENTS) ?



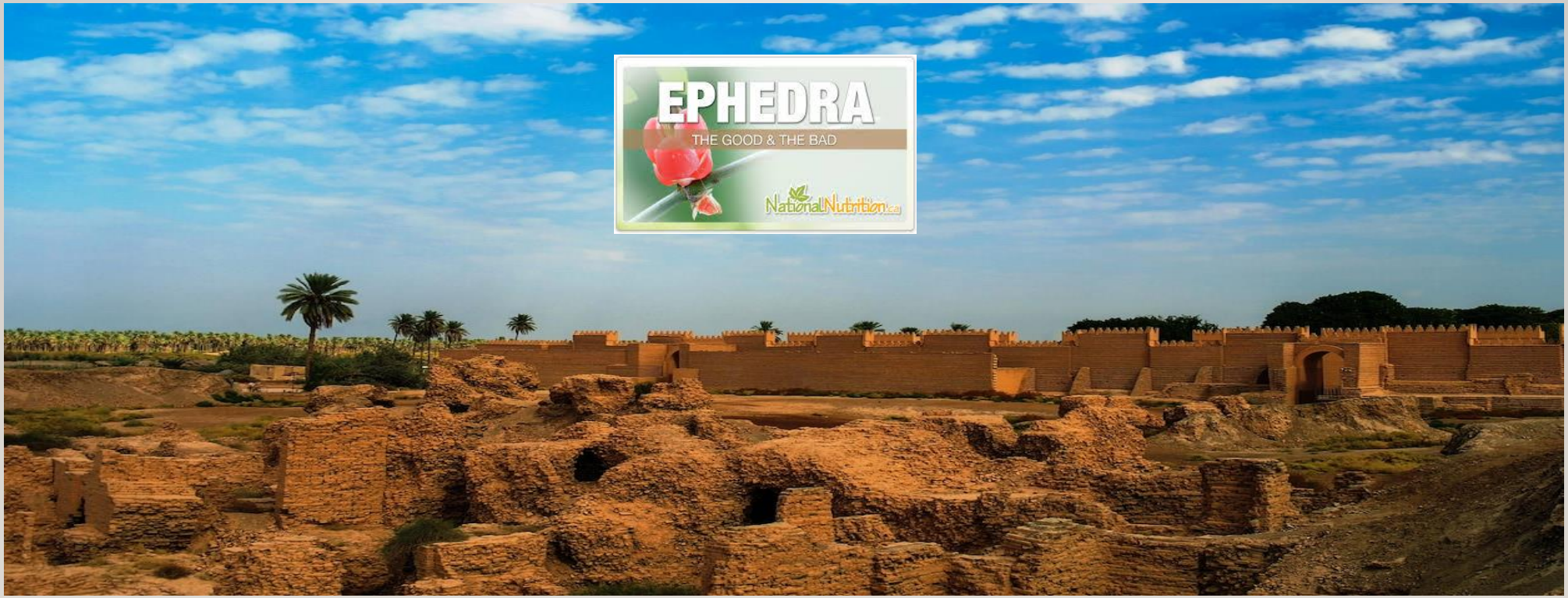

2015

AGE SUPÉRIEUR À 12 ANS / CONSOMMATION AMPHÉTAMINES !

EN 2019 L'AMÉRIQUE DU NORD ENCORE PREMIÈRE …

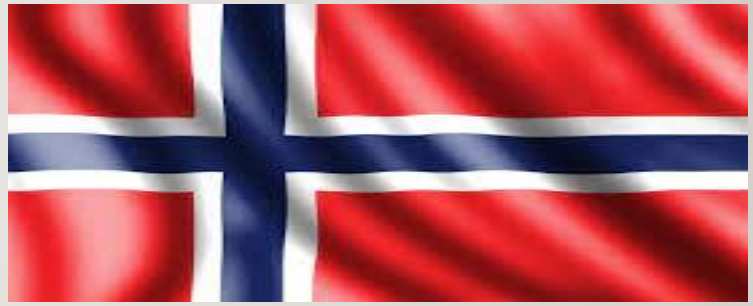


AMPHÉTAMINES DANS LE TEMPS ? DEPUIS QUAND ? ENDROIT ? POURQUOI ? ÉNERGIE / TX ASTHME !



NAGAI NAGAYOSHI (1893) : PREMIER À SYNTHÉTISER LA METHAMPHÉTAMINE À PARTIR DE L'ÉPHÉDRINE !

AMPHÉTAMINES ET 2IÈME GUERRE MONDIALE ?



DÉCÈS CARDIAQUES SECONDAIRES AUX AMPHÉTAMINES …

Original Article

Death in amphetamine users: causes and rates*

HAROLD KALANT, MD, PH D; ORIANA JOSSEAU KALANT, PH D

CARDIOPATHIE DILATÉE SECONDAIRE AUX AMPHÉTAMINES …

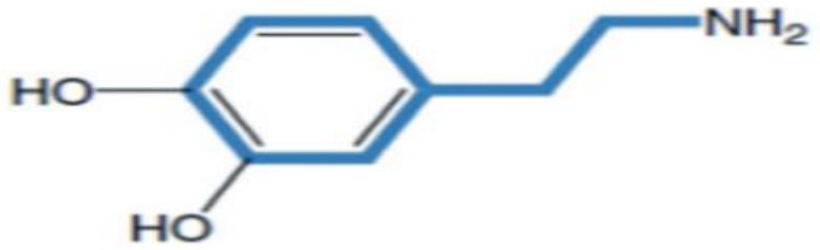
Clin. Cardiol. 12, 725-727 (1989)

Reversible Dilated Cardiomyopathy Induced by Methamphetamine

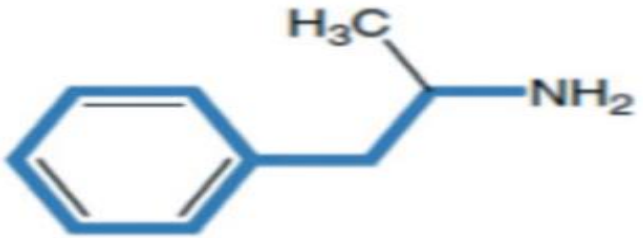
L. J. JACOBS, M.D.

Department of Medicine, Hollywood Memorial Hospital, Hollywood, Florida, USA

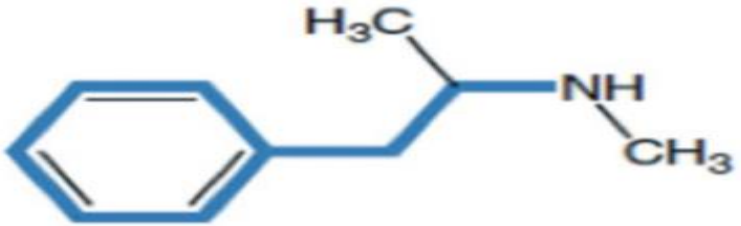
AMPHÉTAMINES



Dopamine



Amphetamine



Methamphetamine

Figure 1. Chemical structures of methamphetamine and related compounds.[11]

AMPHÉTAMINES: ROUTE D'ADMINISTRATION

poudre	• oral • Nasal • IV
cristalline	• oral • Cigarette • IV

+ TOXICITÉ SI IV/FUMÉE (plus haute concentration)

MÉTAMPHÉTAMINES (ICE)

AMPHÉTAMINES (PEANUT)

Peanuts MAIS AUSSI Speed - Crystal - Crank - GO – ICE

Polymorphisms in CYP2D6 may predict methamphetamine related heart failure

Sutter et al. 2013 Clinical Toxicology, 51:7, 540-544, DOI: 10.3109/15563650.2013.818684

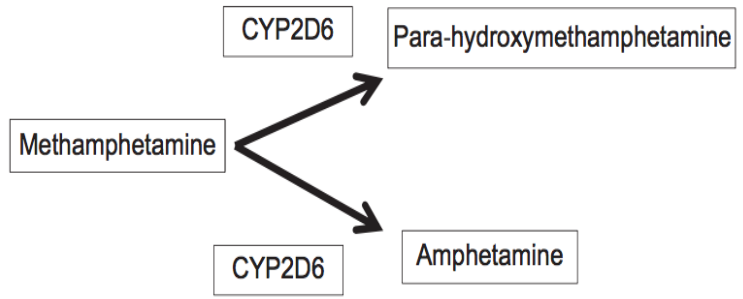


Fig. 1. First and rate-limiting step in the metabolism of methamphetamines in humans.

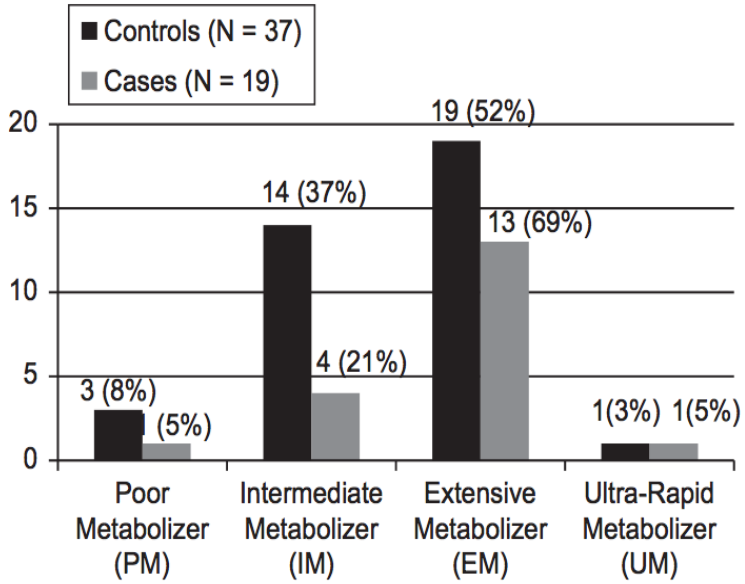
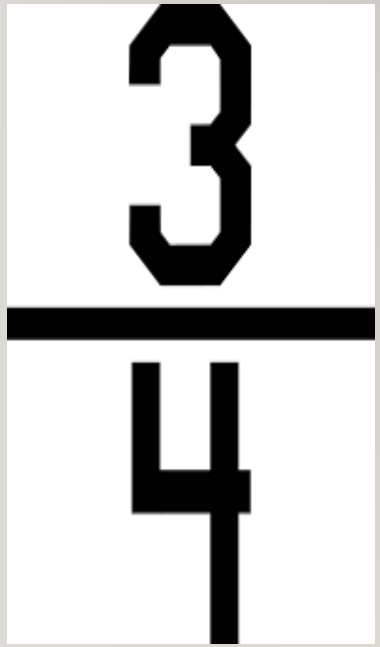
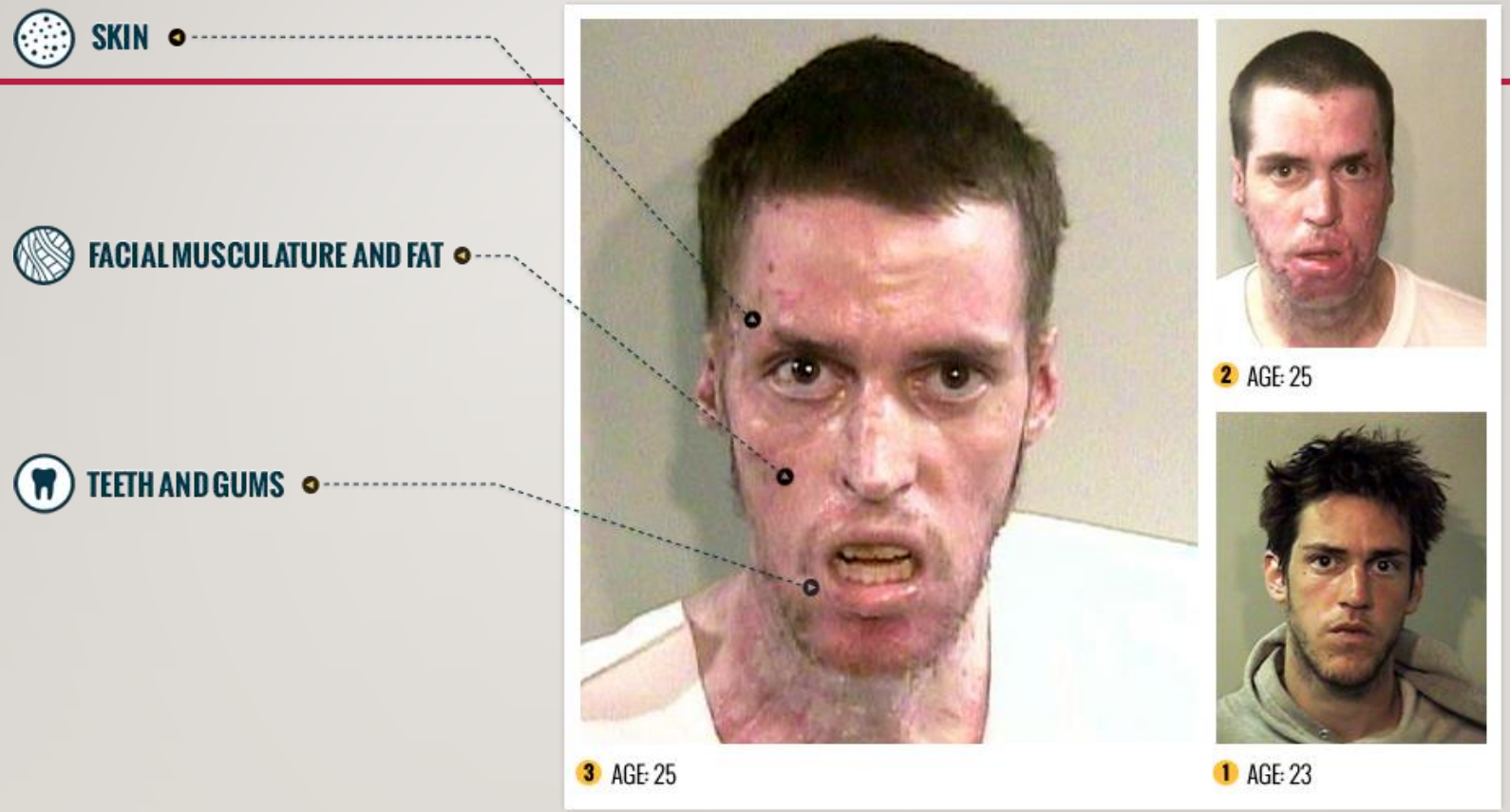


Fig. 2. Genotype by traditional classification. Figure demonstrates the numbers of cases and controls that are classified into the four traditional classifications of poor, intermediate, extensive, and ultra-rapid metabolizers.



AMPHÉTAMINES



Methamphetamine Users

AMPHÉTAMINES

Intoxication aigue

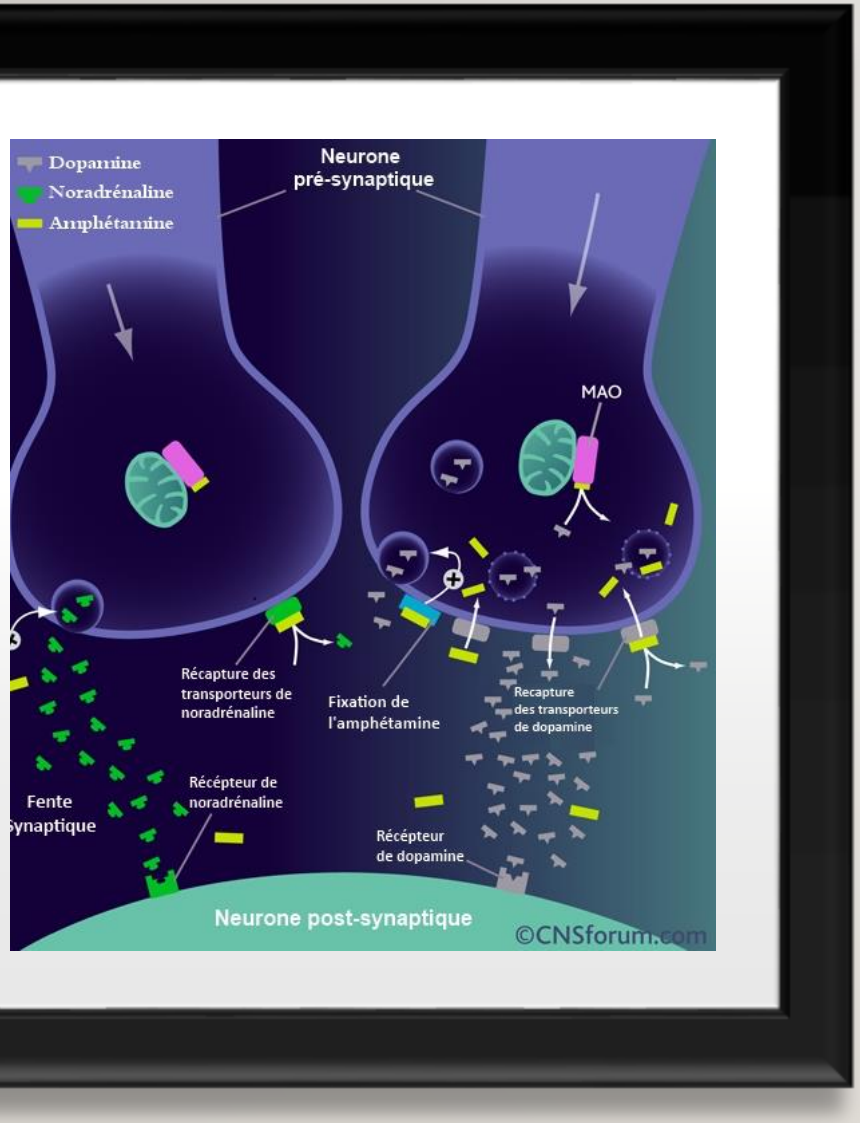
- tachycardie
- Palpitations
- HTA

Intoxication chronique

- HTA chronique / insuffisance cardiaque

Intoxication aigue sévère moins fréquente

- Angine instable
- Infarctus
- Dissection aortique
- Mort subite



TROIS MÉCANISMES : AUGMENTER LA LIBERATION , DIMINUER LA RECAPTURE ET LA DÉGRADATION :

AMPHÉTAMINES ET CARDIOMYOPATHIE

- Vasospasme / Ischémie , Tachycardie , HTA (AIGUE)
- Augmentation du stress oxydatif / dommage des mitochondries

  Athérosclérose ? (SUB-AIGUE / CHRONIQUE)
- Effet direct/nécrose (activation Ca 2+ calmoduline dépendante protéine kinase II → hypertrophie/fibrose) (CHRONIQUE)

AMPHÉTAMINES / CARDIOTOXICITÉS , LA VRAI RÉPONSE ?

Case report

The unique histology of methamphetamine cardiomyopathy: A case report

Karch et al. Forensic Science International 212 (2011) e1–e4; doi:10.1016/j.forsciint.2011.04.028

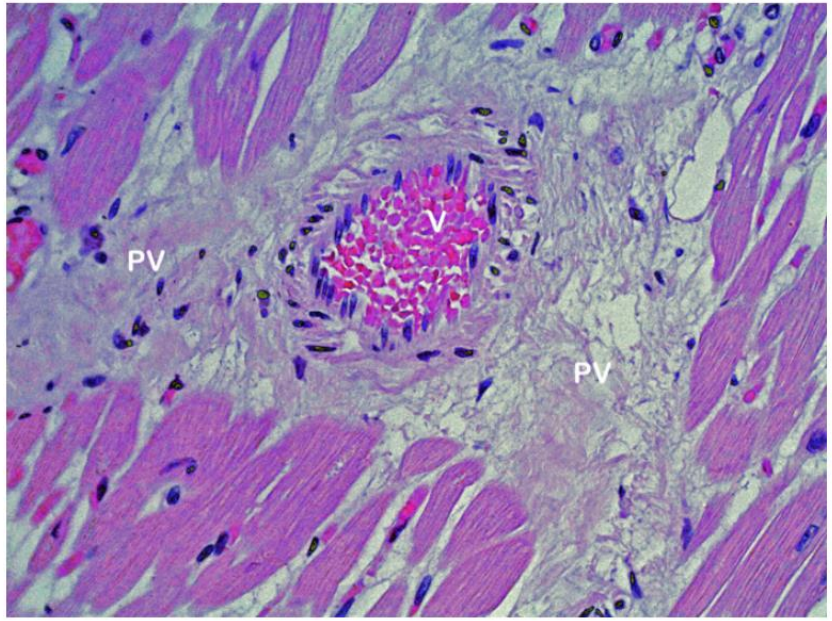


Fig. 3. H&E stain, 40× original magnification: ongoing fibrosis surrounding a venule in the subendocardium. Note the presence of proliferating fibromyocytes surrounding venule.

- On retient:

10 ans

- HVG (→ ischémie)
- fibrose périvasculaire
- vacuolisation myocytaire/atypie nucléaire .

ISCHÉMIE ⏭ FIBROSE

Heart, Lung and Circulation (2016) 25, 325–332
1443-9506/04/$36.00
http://dx.doi.org/10.1016/j.hlc.2015.10.019

REVIEW

The Cardiac Complications of Methamphetamines

Elizabeth D. Paratz, MBBS [a*], Neil J. Cunningham, MBBS, FACEM [b], Andrew I. MacIsaac, MD [a]

[a]Cardiology Department, St Vincent's Hospital Melbourne, Vic, Australia
[b]Emergency Department, St Vincent's Hospital Melbourne, Vic, Australia

Received 27 August 2015; received in revised form 26 October 2015; accepted 31 October 2015; online published-ahead-of-print 28 November 2015

Table 2 **Differing patterns of methamphetamine-associated cardiomyopathy**

Pattern	Presumed mechanism	Reported in literature
Dilated	Direct toxicity of methamphetamine to cardiac myocytes	Rajs 1979, Jacobs 1989, Nestor 1989, Hong 1991, Wijetunga 2003, Ito 2009 [11–16]
Hypertrophic	Profound hypertension (increased peripheral vascular resistance) from activation of peripheral α- and β-adrenoreceptors	
Stress cardiomyopathy (Takotsubo or reverse-Takotsubo pattern)	Acute effect of catecholamines on adrenoreceptors in myocardium	Movahed 2008, Srikanth 2008 [17,18]

INTERNAL MEDICINE JOURNAL

Methamphetamine-associated cardiomyopathy: patterns and predictors of recovery

A. Voskoboinik,[1] J. F. Ihle,[2] J. E. Bloom[1] and D. M. Kaye[1,3]

Departments of [1]Cardiology and [2]Intensive Care, The Alfred Hospital, and [3]Heart Failure Research, Baker IDI, Melbourne, Victoria, Australia

Table 1 Characteristics of 20 patients with methamphetamine-associated cardiomyopathy

Characteristic	*n* = 20	%
Age at diagnosis <40 years	16	80
Male	14	70
Choice of methamphetamine		
'Ice'	11	55
'Speed'	7	35
Not stated	3	15
Route of administration		
Inhaled	7	35
Intravenous	6	30
Oral	5	25
Duration of use		
Less than 1 month	7	35
1–12 months	4	20
Greater than 12 months	7	35
Unknown	2	10
Additional substance abuse		
Alcohol	3	15
Cocaine	2	10
Illness severity		
Inotropic therapy	14	70
ICU admission	9	45
Mechanical support or transplant	6	30
Echocardiographic parameters		
LVEF ≤ 20%	15	75
LVEDD ≥ 65 mm	12	60
Left atrial dilatation	14	70
IVS thickness ≥ 11 mm	5	25
IVS thickness ≤ 7 mm	6	30
Global dysfunction	14	70
Reverse Takotsubo pattern	6	30

INTERNAL MEDICINE JOURNAL

Methamphetamine-associated cardiomyopathy: patterns and predictors of recovery

A. Voskoboinik,[1] J. F. Ihle,[2] J. E. Bloom[1] and D. M. Kaye[1,3]

Departments of [1]Cardiology and [2]Intensive Care, The Alfred Hospital, and [3]Heart Failure Research, Baker IDI, Melbourne, Victoria, Australia

Table 2 Features associated with early recovery (LVEF ≥ 50% within 6 weeks of diagnosis)

Characteristic	Early recovery (n = 6)	No early recovery (n = 13)	P value
Age at diagnosis (years)	35.9 ± 7.5	34.6 ± 10.4	0.79
Initial LVEF (%)	18 ± 12	18 ± 9	0.92
LV size (LVEDD) (mm)	49 ± 9	73 ± 8	<0.01
LV wall thickness (IVS) (mm)	8 ± 2	9 ± 2	0.63
Left atrial area (cm^2)	18 ± 9	29 ± 6	<0.01
Reverse Takotsubo pattern	5 (83%)	0%	<0.01
Duration of use (days)	3 ± 5	1364 ± 1340	0.04
Troponin-I level (ug/L)	4.05 ± 2.0	0.03 ± 0.02	<0.01
Creatine kinase level (U/L)	640 ± 370	94 ± 71	<0.01

A Comparison of Echocardiographic Findings in Young Adults With Cardiomyopathy: With and Without a History of Methamphetamine Abuse

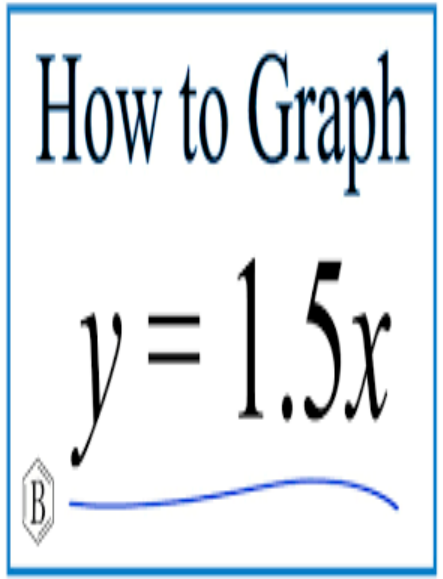
Ito et al. Clin Cardiol. 2009 June ; 32(6): E18–E22. doi:10.1002/clc.20367.

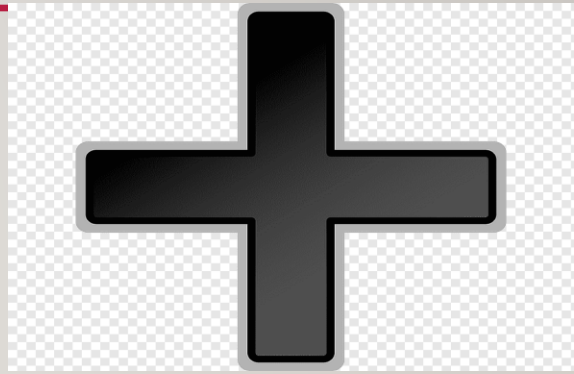
Table 3

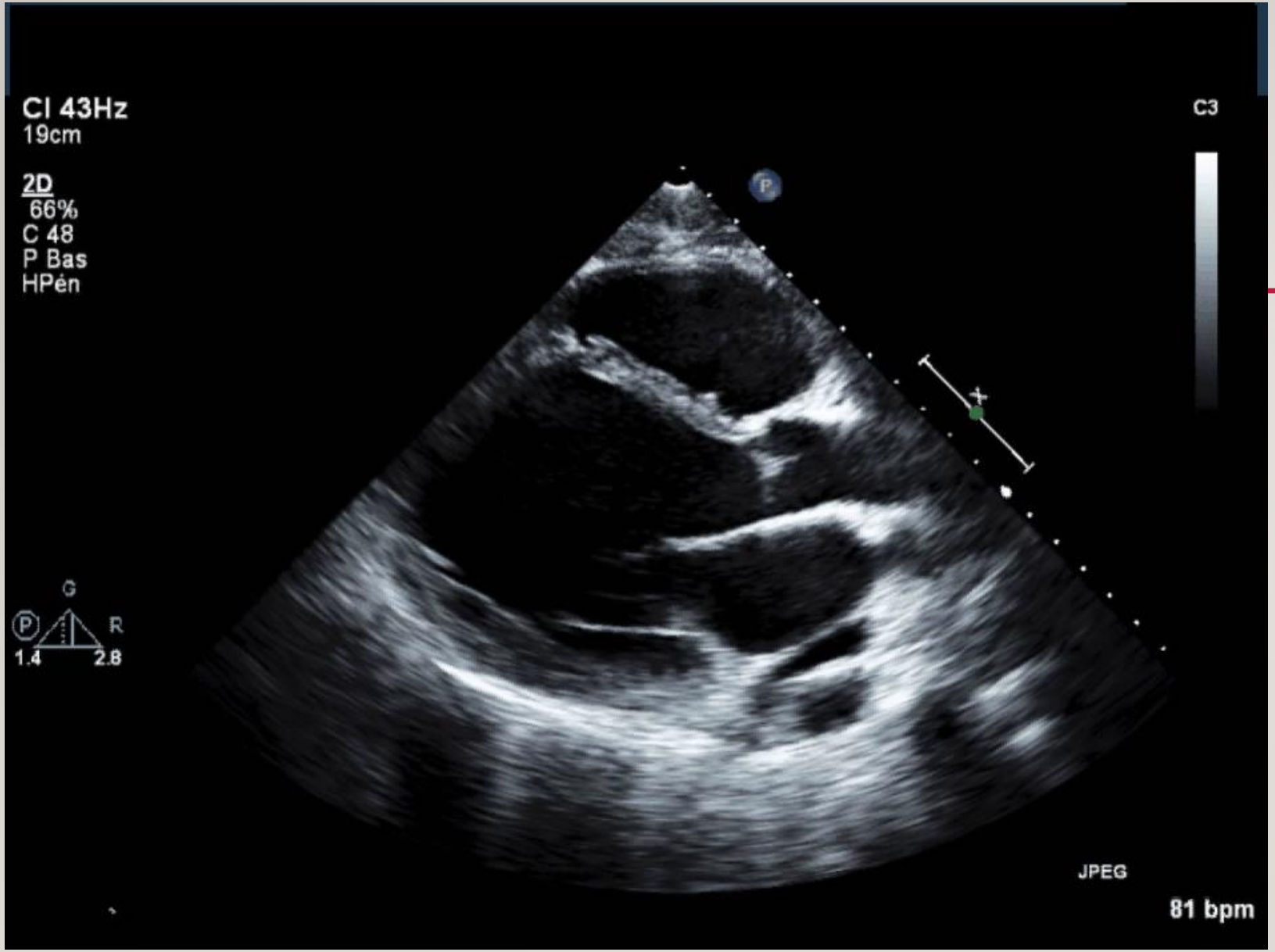
Echocardiographic Findings

	All	MAP Use	No MAP Use	*P* Value
LVEDV (mL)	178.1 ± 70.4	201.9 ±71.4	156.6 ±63.1	.013
LVEDV/BSA (mL/m^2)	84.7 ±33.5	96.7 ±34.5	73.7 ±28.9	.006
LVESV (mL)	113.4 ±58.5	136.0 ±53.7	92.3 ±55.8	.004
LVESV/BSA (mL/m^2)	53.7± 28.0	65.7 ±27.9	42.6 ±23.3	.001
Quantified LVEF (%)	38.0 ±16.1	32.9 ±11.3	42.6 ±17.8	.004
Estimated LVEF (%)	31.5 ±15.4	25.9 ±9.9	37.1 ± 17.9	.006
LV mass (gm)	223.1 ±87.3	238.2 ±80.5	209.5 ±92.2	.2
LV mass/BSA (gm/m^2)	107.1 ± 47.7	113.1 ±34.2	101.4 ± 57.6	.35
LAV (mL)	101.9 ± 48.0	119.7 ±55.4	85.8 ±33.5	.008
LAV/BSA (mL/m^2)	49.0 ± 24.4	56.9 ±25.2	41.7 ±21.6	.017
RV (mm)	23.7 ±6.6	26.3 ±6.0	21.3 ±6.0	.007
RV/BSA	11.5 ±3.7	12.7 ±3.7	10.2 ±3.3	.025
MR	44 (74.6%)	24 (85.7%)	20 (64.5%)	.025
E (cm/s)	99.1 ±39.9	100.9 ±42.4	97.8 ±38.5	.8
A (cm/s)	44.7 ±38.1	44.3 ±38.9	45.0 ± 38.1	.9
E/A	5.8 ±8.9	6.4 ±9.8	5.2±8.2	.6
DCT (ms)	148.8 ± 55.1	145.1 ±65.5	151.7 ±46.6	.68
RVSP	34.3 ±12.2	36.6 ±9.2	32.0 ±14.6	.2

Abbreviations: BSA = body surface area; DCT = deceleration time; LAV = left atrial volume; LV = left ventricle; LVEDV = left ventricular end-diastolic volume; LVEF = left ventricular ejection fraction; LVESV = left ventricular end-systolic volume; MAP = methamphetamine; MR = mitral regurgitation; RV = right ventricle; RVSP = right ventricle systolic pressure.






CI 43Hz
19cm
2D
66%
C 48
P Bas
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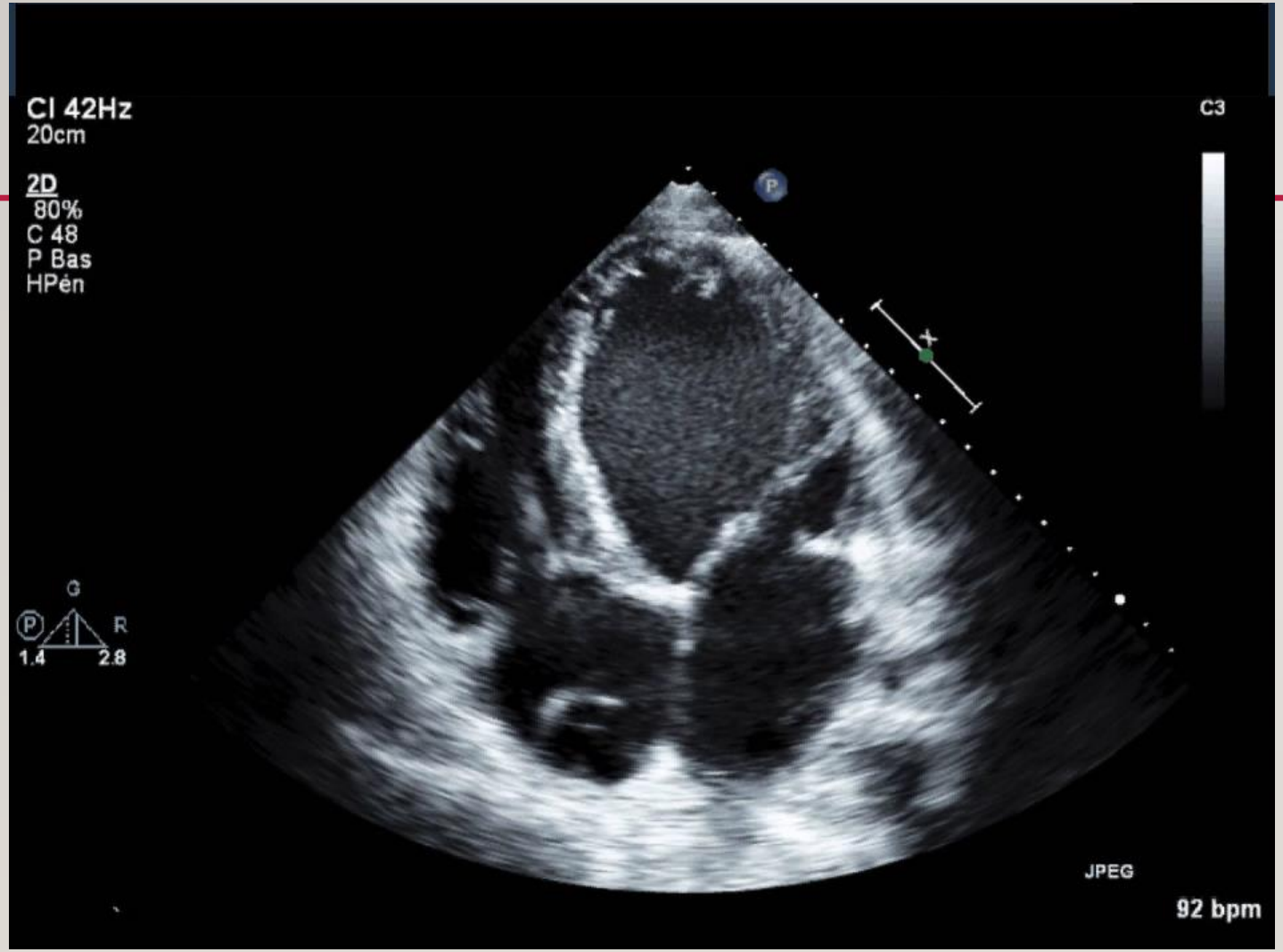
C3
G
P
R
1.4
2.8
JPEG
81 bpm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20cm
2D
80%
C 48
P Bas
HPen
C3
G
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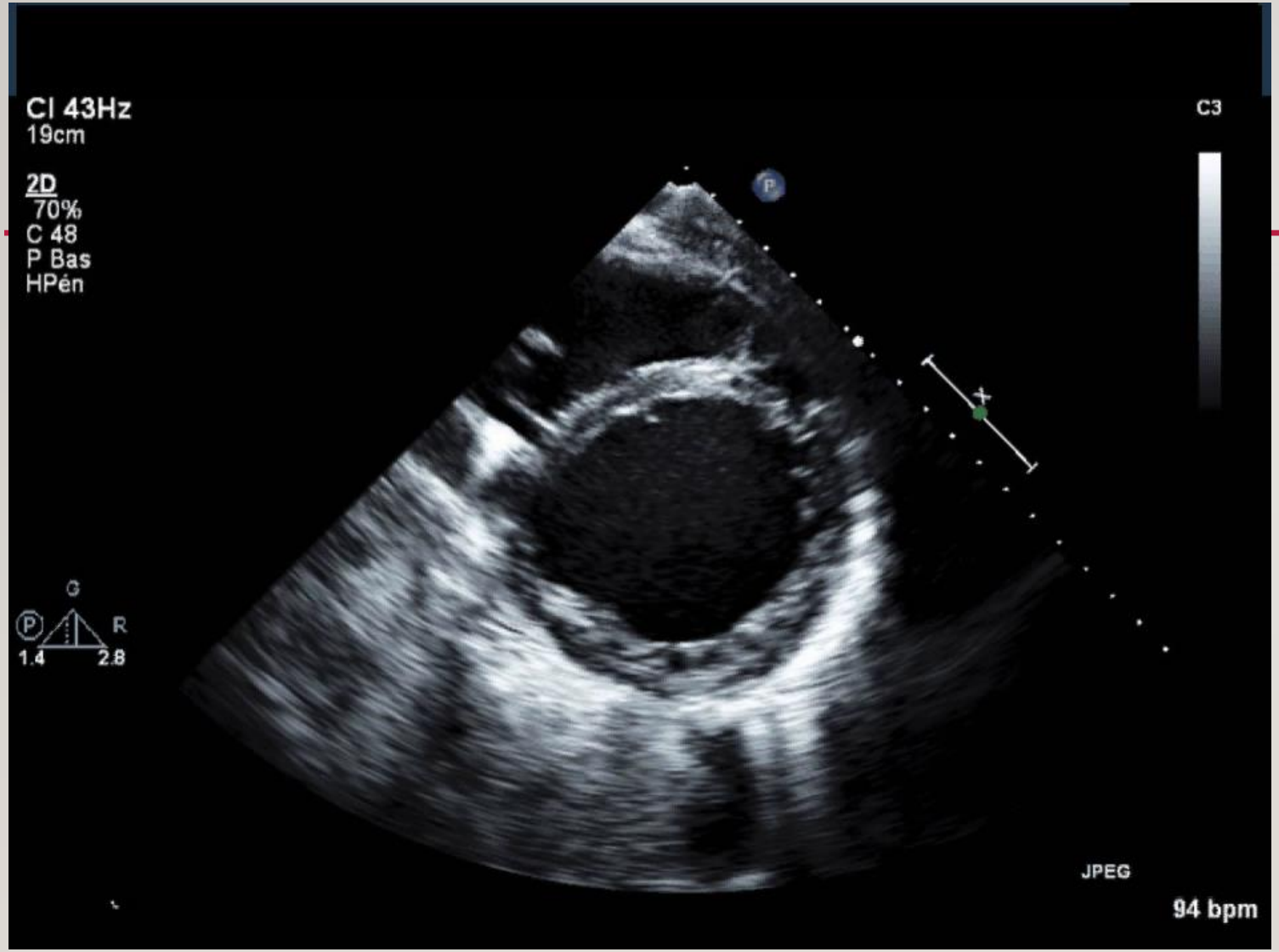
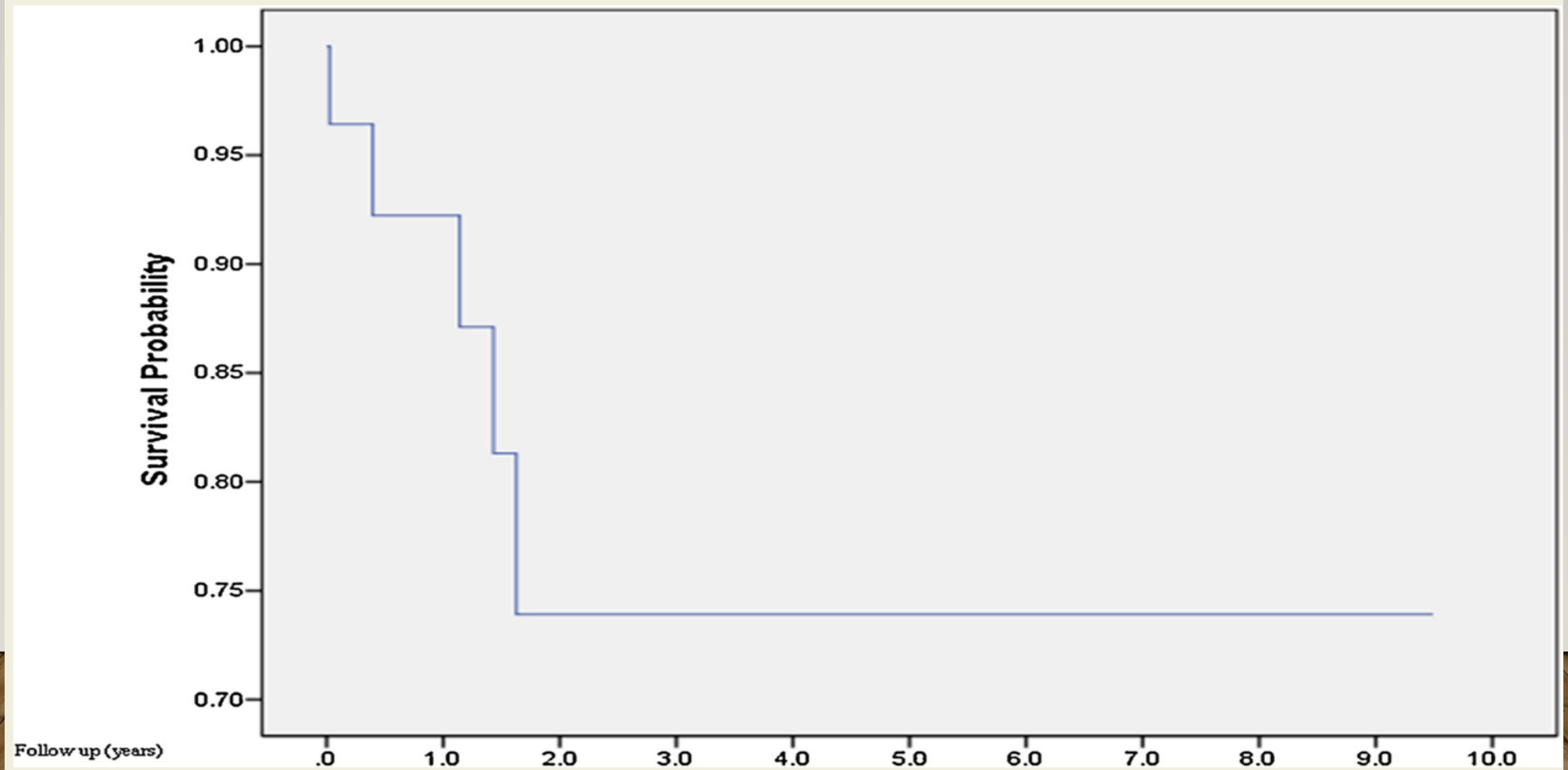
1.4
2.8
JPEG
92 bpm


CI 43Hz
19cm
2D
70%
C 48
P Bas
HPén
C3
G
P
R
1.4
2.8
JPEG
94 bpm

CARDIOPATHIE TOXIQUE / NOUVELLE ZÉLANDE / PRONOSTIC ?

Clinical Characteristics and Outcomes of Patients with Amphetamine-associated Cardiomyopathy in South Auckland, New Zealand

Kueh S-H, et al. Heart, Lung and Circulation (2016), http://dx.doi.org/10.1016/j.hlc.2016.03.008



AMPHÉTAMINES / SUIVI / COMPLIANCE / CONSOMMATION ???

- Échocardiographie de contrôle (50 % des patients)
  - 57 % HOSPITALISATION / 17% MORTALITÉ .
  - médiane de 375 jours (1 an) .
  - ↑ FE 9% (médiane) .
  - SUIVI /COMPLIANCE ????

JACC: HEART FAILURE
VOL. 5, NO. 6, 2017

ISSN 2213-1779/$36.00
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http://dx.doi.org/10.1016/j.jchf.2017.02.017

Clinical Characteristics, Histopathological Features, and Clinical Outcome of Methamphetamine-Associated Cardiomyopathy

Stephan Schürer, MD,[a] Karin Klingel, MD,[b] Marcus Sandri, MD,[a] Nicolas Majunke, MD,[a] Christian Besler, MD,[a] Reinhard Kandolf, MD,[b] Philipp Lurz, MD,[a] Michael Luck, MD,[a] Pia Hertel, MSc,[a] Gerhard Schuler, MD,[a] Axel Linke, MD,[a] Norman Mangner, MD[a]

AGE /FE /DIMENSION DIASTOLIQUE /ALLEMAGNE :

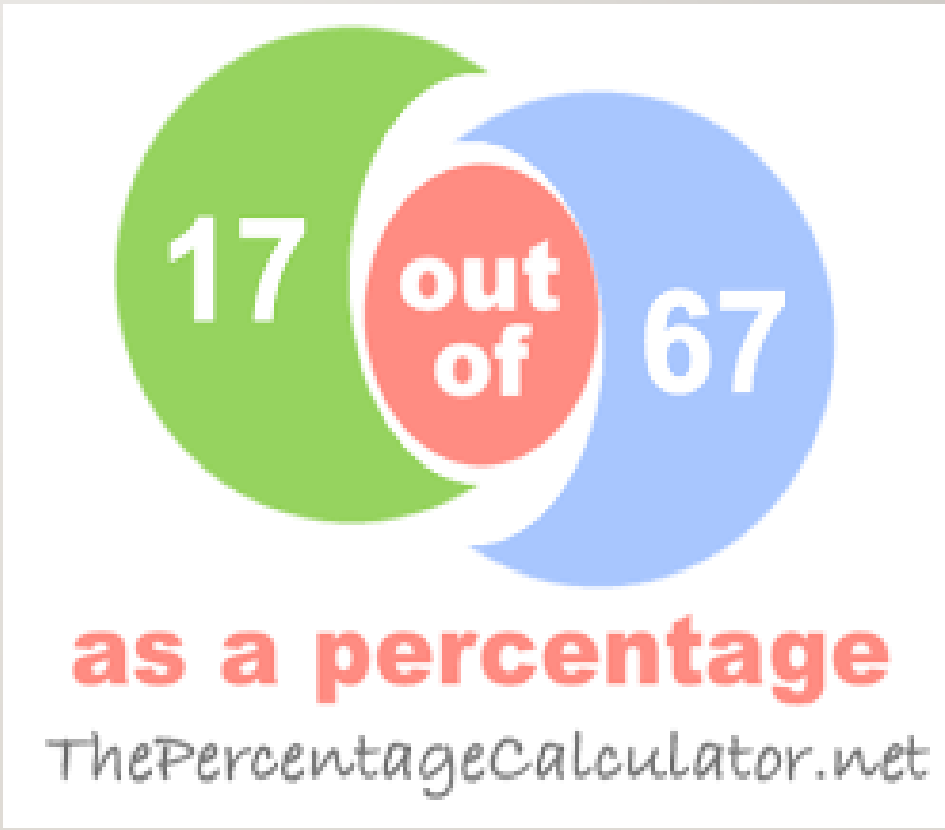
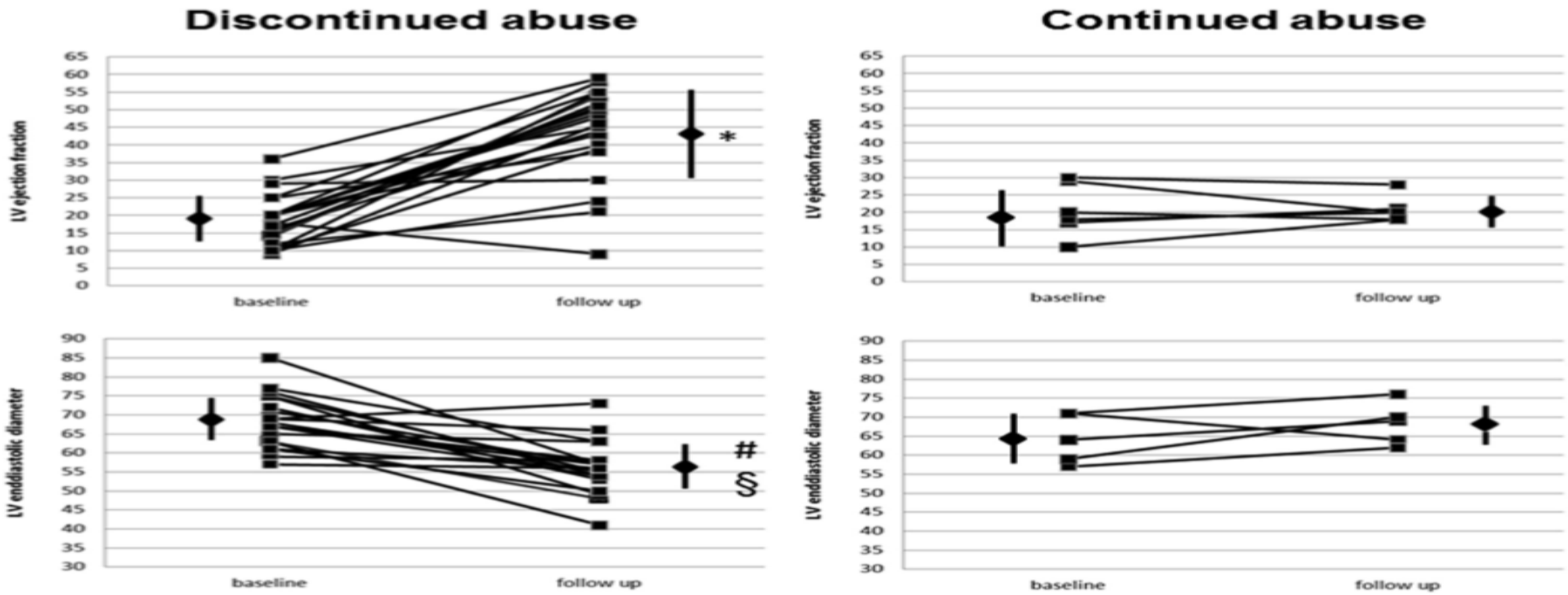
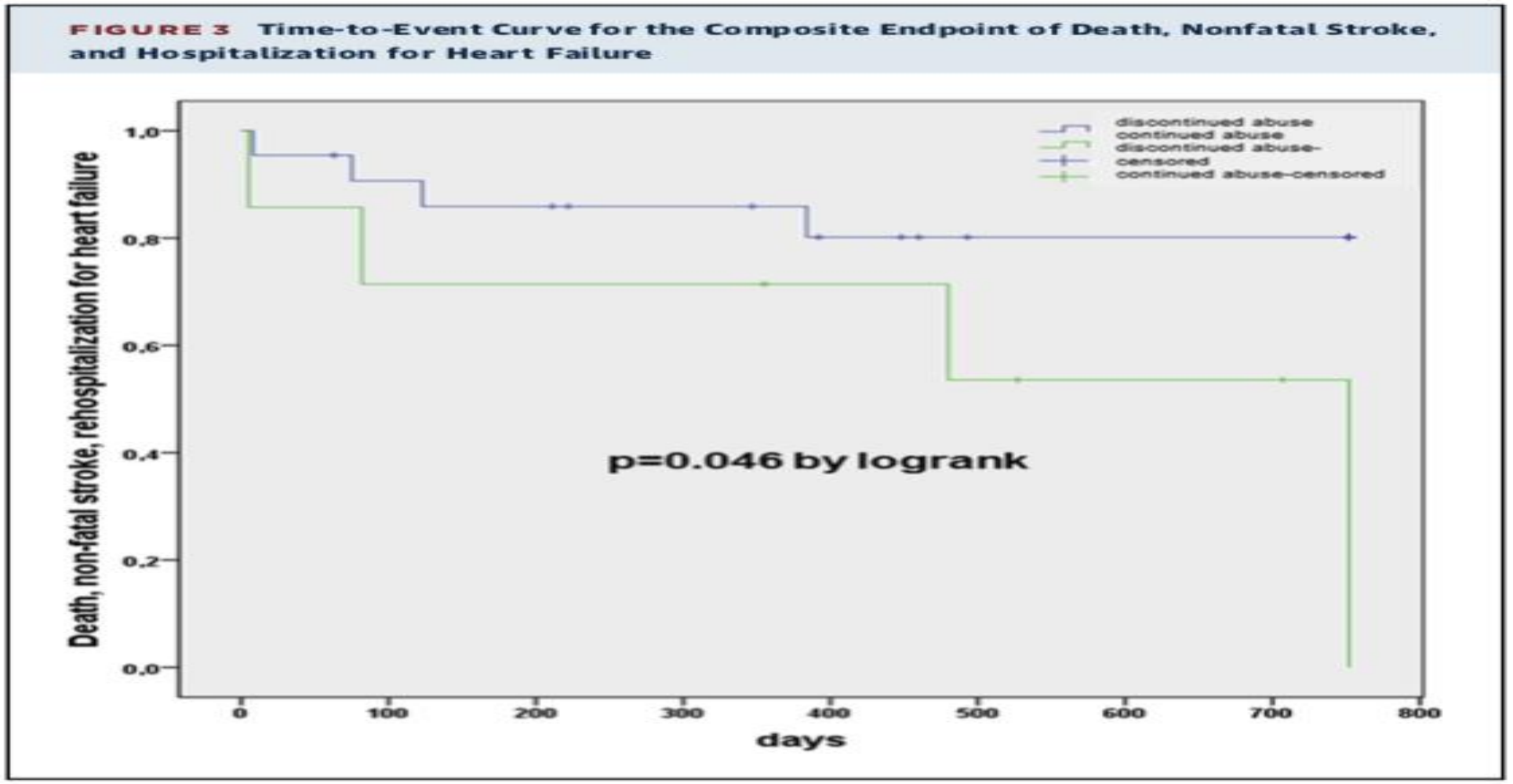


FIGURE 1 Individual Changes of LV Ejection Fraction and LV End Diastolic Diameter



Changes in left ventricular (LV) ejection fraction and left ventricular end-diastolic diameter are shown in patients with discontinued **(left)** and continued **(right)** methamphetamine abuse. *$p < 0.001$ versus continued abuse and baseline; #$p < 0.001$ versus baseline; §$p < 0.05$ versus continued abuse.

FIGURE 3 Time-to-Event Curve for the Composite Endpoint of Death, Nonfatal Stroke, and Hospitalization for Heart Failure



CE QUE L'ON DOIT RETENIR ?

- APRÈS PLUS 2-3 ANS EN PRÉSENCE D'UN TRAITEMENT USUEL ET D'UN ARRÊT DE CONSOMMATION LA FRACTION D'ÉJECTION PEUT DOUBLER ET ÊTRE SUPÉRIEUR À 40 % !

BOISSONS ÉNERGISANTES ET EFFETS SECONDAIRES CARDIAQUES …

DOI: 10.1080/00325481.2015.1001712

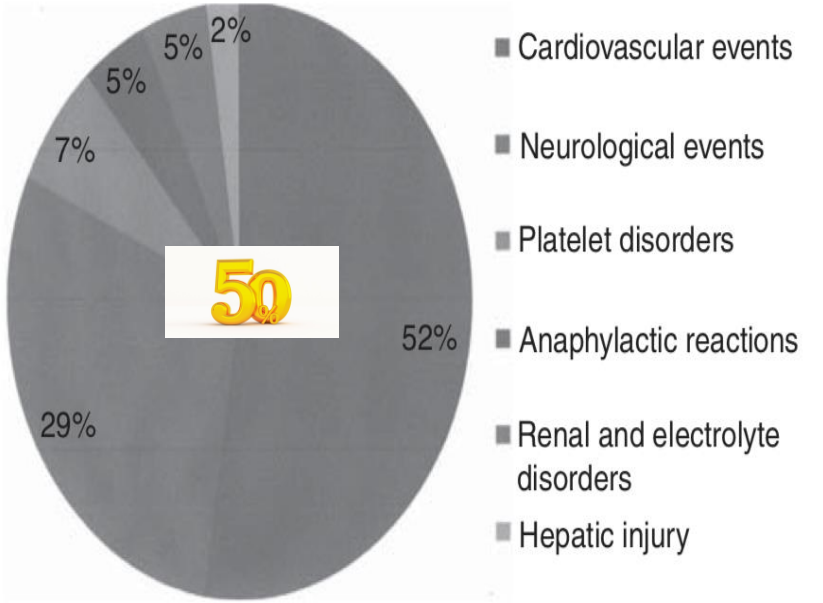
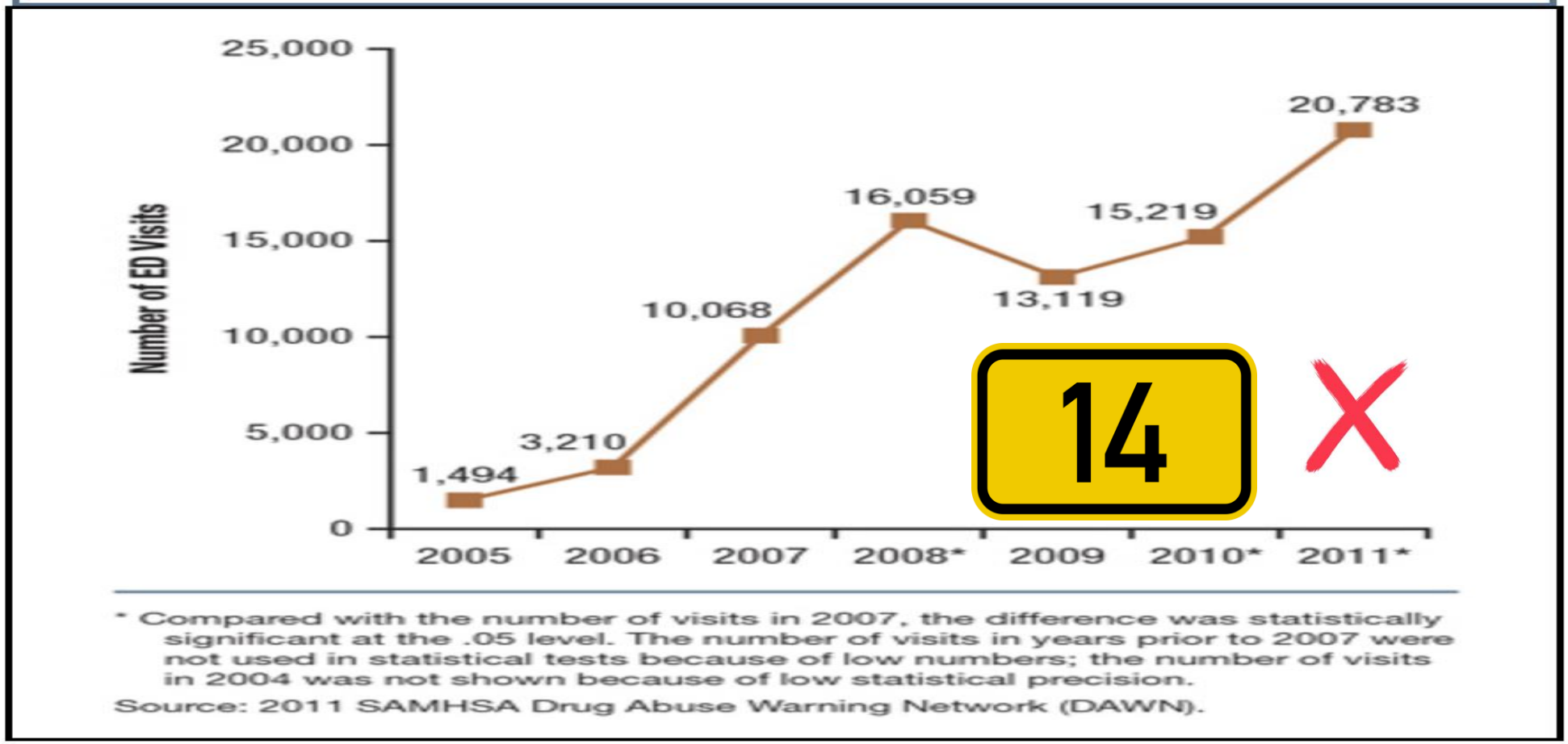


Figure 2. Energy drink–related adverse events by organ system (n = 43).

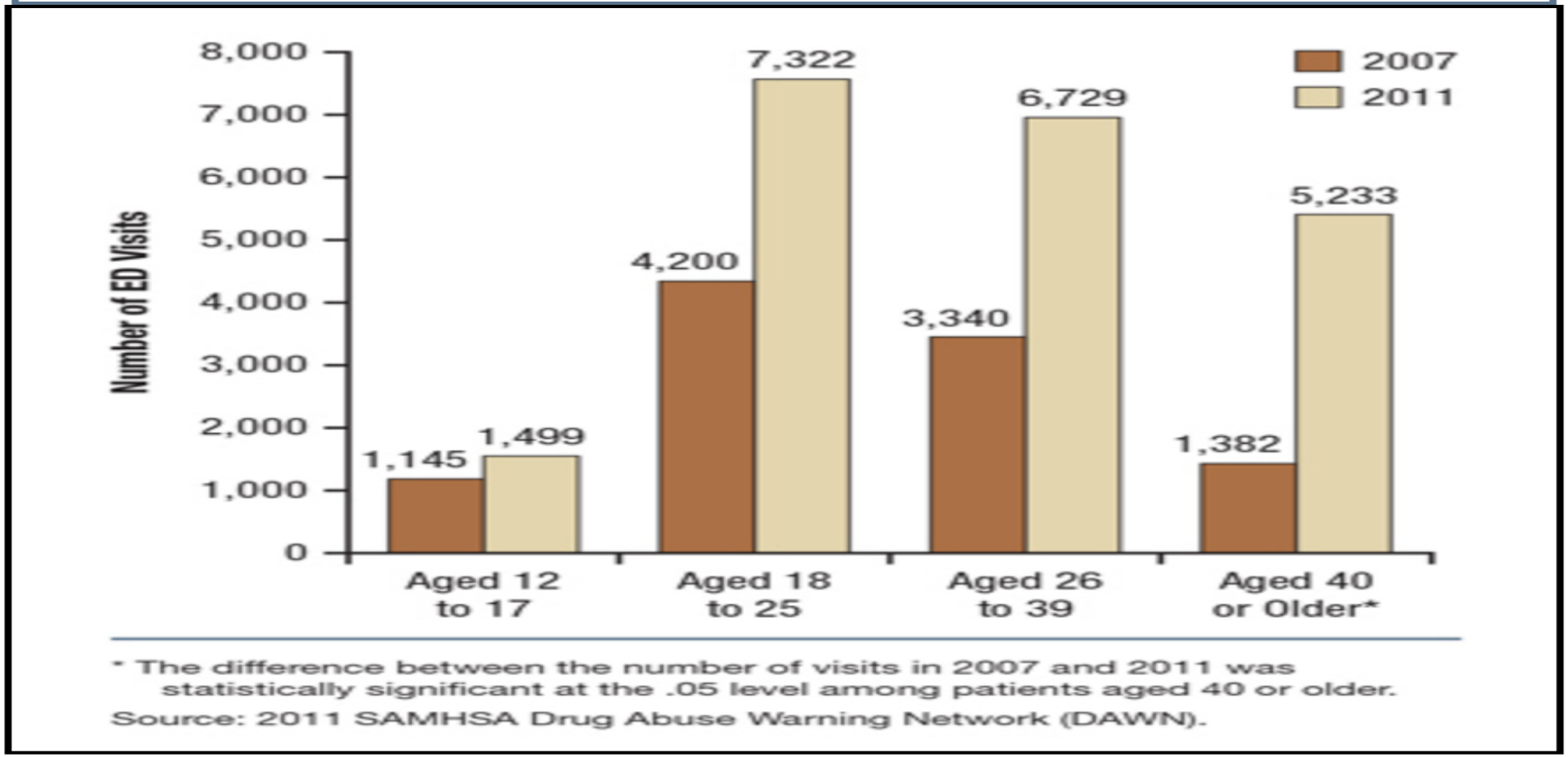
Figure 1. Energy Drink-Related Emergency Department (ED) Visits, by Year: 2005 to 2011



* Compared with the number of visits in 2007, the difference was statistically significant at the .05 level. The number of visits in years prior to 2007 were not used in statistical tests because of low numbers; the number of visits in 2004 was not shown because of low statistical precision.

Source: 2011 SAMHSA Drug Abuse Warning Network (DAWN).

Figure 4. Energy Drink-Related Emergency Department (ED) Visits, by Age Group: 2007 and 2011



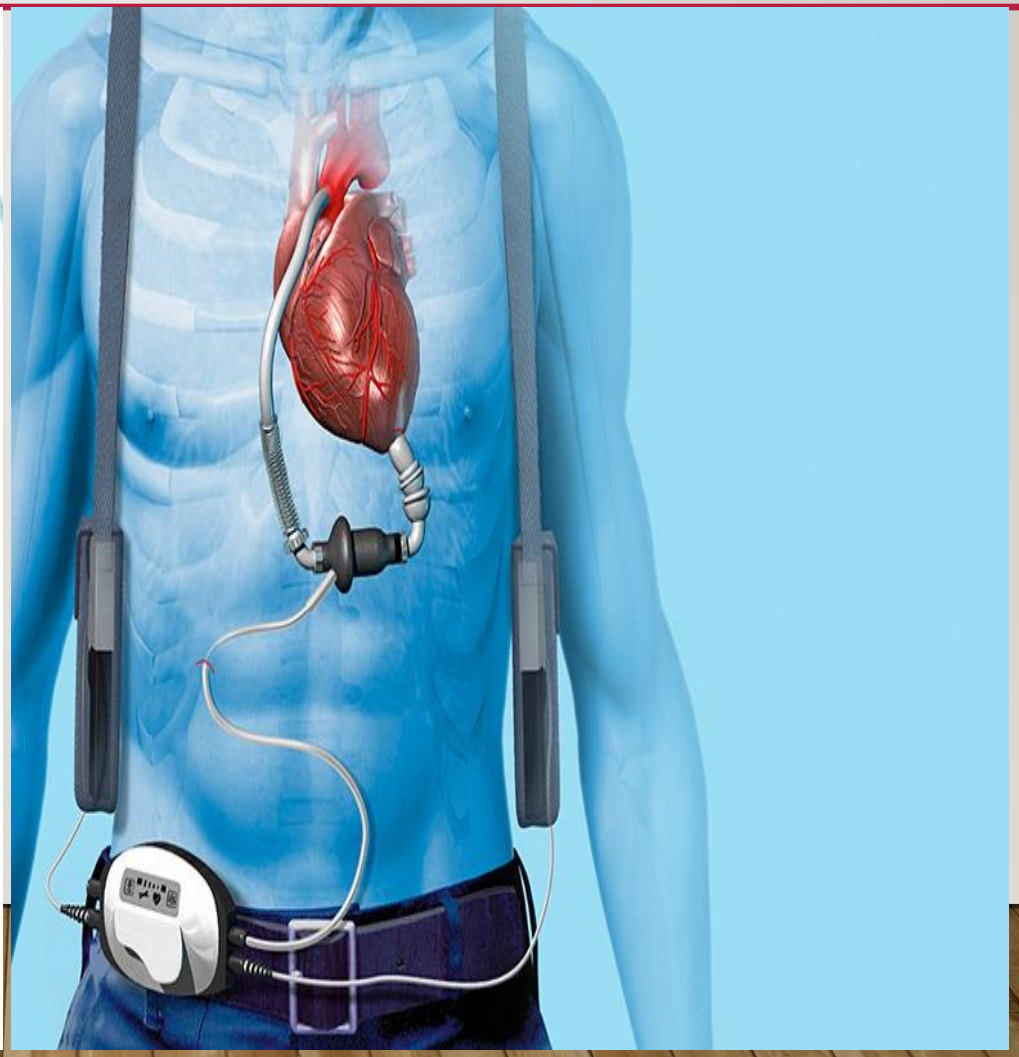
* The difference between the number of visits in 2007 and 2011 was statistically significant at the .05 level among patients aged 40 or older.

Source: 2011 SAMHSA Drug Abuse Warning Network (DAWN).

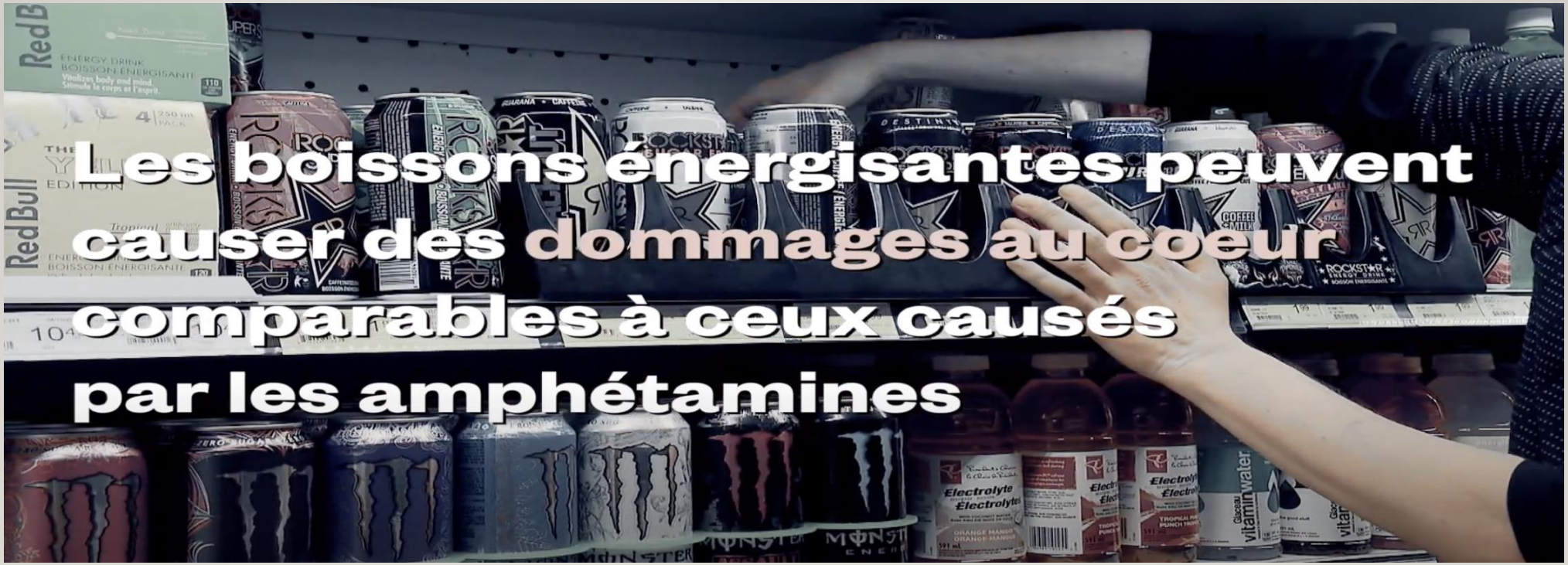
BOISSONS ÉNERGISANTES : POTENTIELLENT DANGEUREUSE À TOUT ÂGE …

DEUX CAS DE MORT SUBITE RÉANIMÉE SECONDAIRE À UNE CONSOMMATION PONCTUELLE EXCESSIVE …

CONSOMMATION EXCESSIVE CHRONIQUE DE BOISSONS ÉNERGISANTES ET CŒUR MÉCANIQUE (N= 3)



AMPHÉTAMINES /BOISSONS ÉNERGISANTES CARDIOTOXICITÉ SIMILAIRE ? OUI !

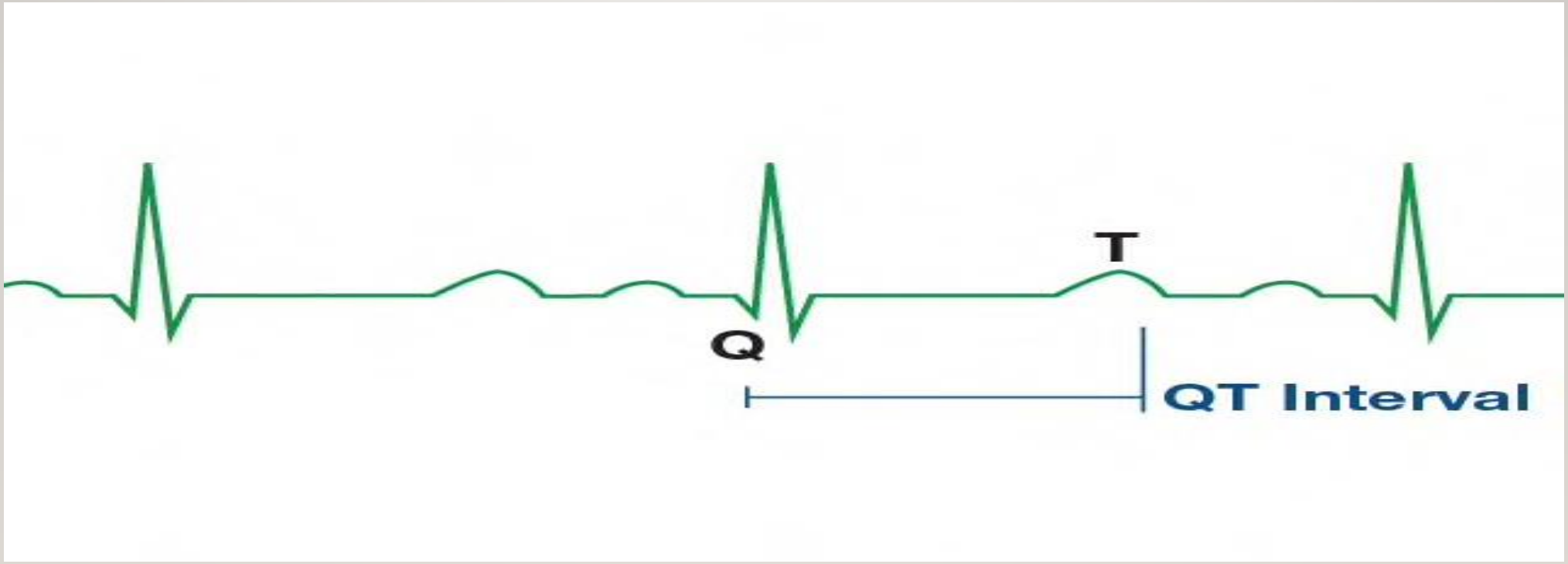


BOISSONS ÉNERGISANTES ET MORTALITÉ … ET PROBABLEMENT SOUS RAPPORTÉE !

- From 2009 to 2013, a total of 43 fatalities were linked to Monster Energy and 5-hour Energy as reported by the FDA's Center for Food and Safety and Applied Nutrition (CFSAN) Adverse Event Reporting System (CAERS) [2].

[1] CFSAN Adverse Event Reporting System. *CAERS Reports Allegedly Related to Multiple Energy Drinks.* Center for Science in the Public Interest. Available from: https://cspinet.org/resource/caers-reports-allegedly-related- multiple-energy-drinks

BOISSONS ÉNERGISANTES ET ARYTHMIES MALIGNES ?



American Journal of Emergency Medicine 34 (2016) 1205–1209

Contents lists available at ScienceDirect

American Journal of Emergency Medicine

journal homepage: www.elsevier.com/locate/ajem

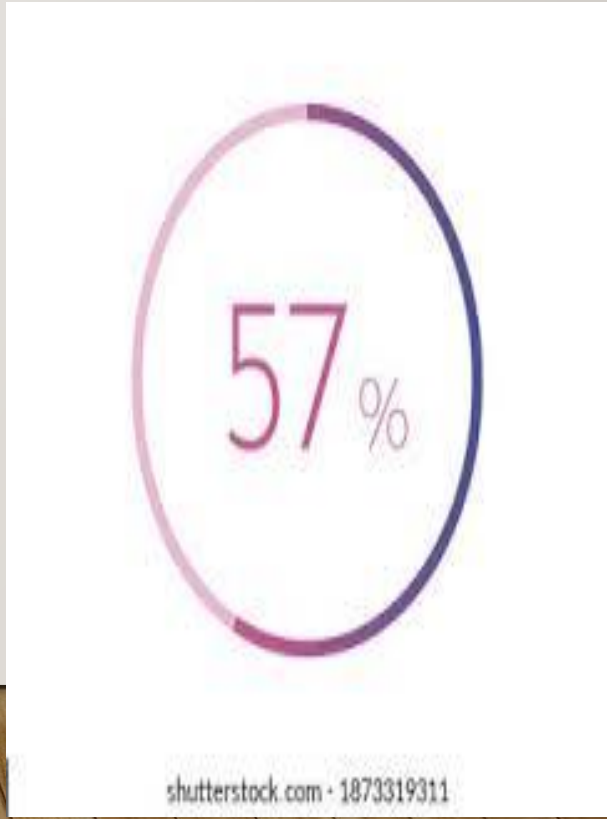
Original Contribution

Cardiovascular responses to energy drinks in a healthy population: The C-energy study☆,☆☆

Teri M. Kozik, PhD, RN, CNS, CCRN [a,*], Sachin Shah, PharmD [b], Mouchumi Bhattacharyya, PhD [c], Teresa T. Franklin, BSN [a], Therese Farrell Connolly, BSN [a], Walter Chien, MD [d], George S. Charos, MD [e], Michele M. Pelter, RN PhD [f]

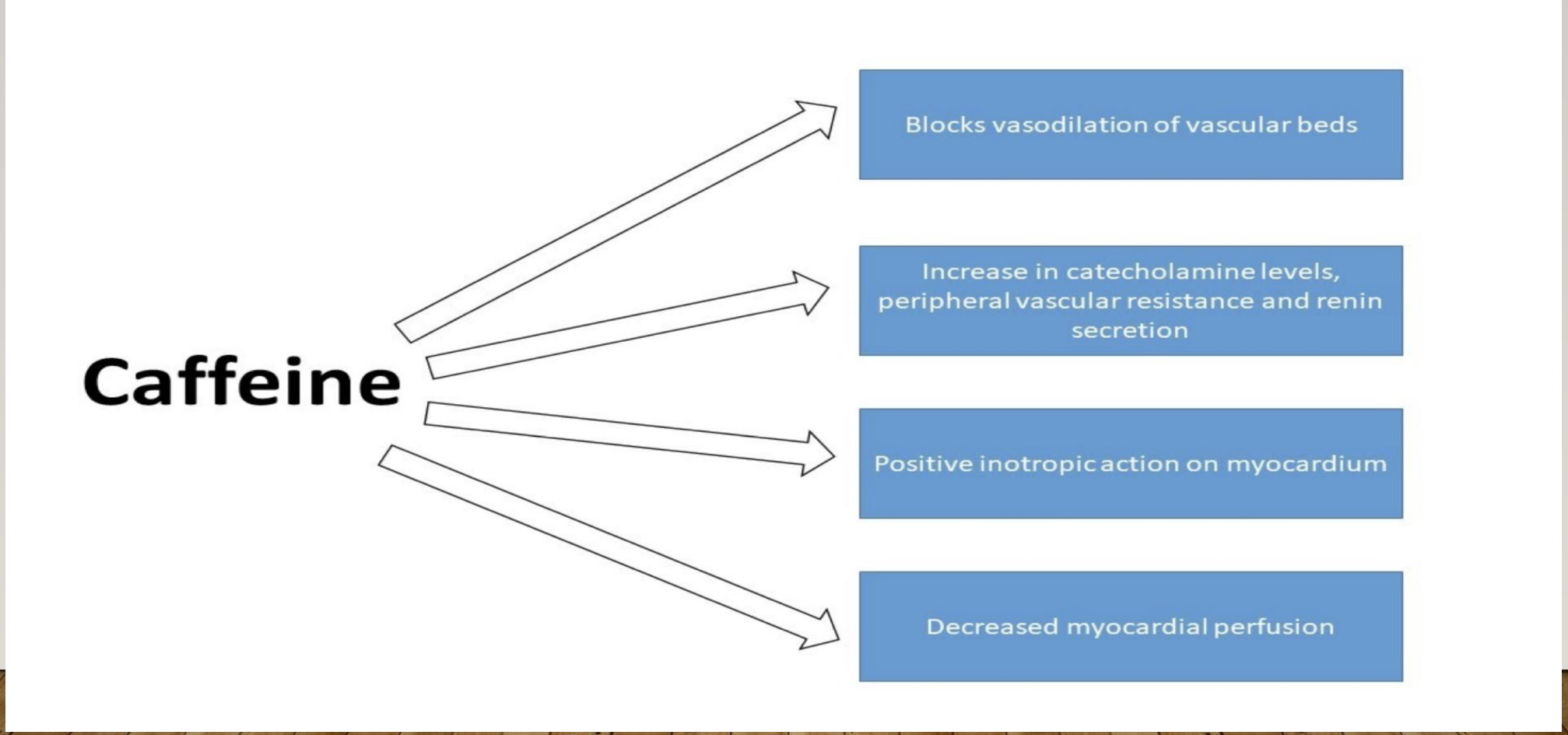
Table 2
QTc intervals of all subjects

Subject #	Baseline QTc (mm)/Heart Rate	Maximum QTc (mm)/Heart Rate	Change QTc (mm)
1	*	491/100	*
2	436/68	534/94	98
3	455/94	499/115	44
4	*	517/111	*
5	436/79	483/100	47
6	400/63	516/100	116
7	447/75	491/100	44
8	405/71	509/120	104
9	439/67	516/100	77
10	400/60	437/88	37
11	438/65	509/88	71
12	390/79	490/115	100
13	395/48	508/115	113
14	430/79	535/107	105
	$\mu = 423/71$	$\mu = 503/104$	$\mu = 80$



POURQUOI LES HOSPITALISATIONS / DÉCÈS ?

CAFÉINE / TOXICITÉ CARDIAQUE ?



SÉCURITÉ DE LA CAFÉINE ? (400MG/2,5MG/KG)

Tableau 8 Limites recommandées de l'apport quotidien maximal en caféine chez la population en bonne santé

Population	Apport quotidien maximal de caféine recommandé	Équivalent en contenant de boissons énergisantes
Adultes (en bonne santé)	400 mg (environ 6 mg/kg)	Environ 5 canettes de 250 ml d'une boisson énergisante contenant 80 mg de caféine. ***Selon Santé Canada : maximum 2 canettes contenant chacune 80 mg de caféine ou 1 canette de plus grand volume (contenant 140 mg de caféine ou plus).***
Femmes qui prévoient devenir enceintes, femmes enceintes et mères qui allaitent	300 mg	Environ 3 à 4 canettes de 250 ml d'une boisson énergisante contenant 80 mg de caféine. ***Selon Santé Canada : boissons énergisantes déconseillées aux femmes enceintes ou qui allaitent.***
Enfants de 12 ans et moins	2,5 mg/kg *(selon le poids corporel)*	***Selon Santé Canada : boissons énergisantes déconseillées aux enfants.***
Enfants 4 - 6 ans	*45 mg (selon le poids corporel moyen)*	Environ 1/2 canette de 250 ml d'une boisson énergisante contenant 80 mg de caféine.
Enfants 7 - 9 ans	*62,5 mg (selon le poids corporel moyen)*	Environ 3/4 canette de 250 ml d'une boisson énergisante contenant 80 mg de caféine.
Enfants 10 - 12 ans	*85 mg (selon le poids corporel moyen)*	Environ 1 canette de 250 ml d'une boisson énergisante contenant 80 mg de caféine.
Adolescents âgés de 13 ans et plus	2,5 mg/kg *(selon le poids corporel)* (max : 400 mg) **Note :** *Il s'agit d'une suggestion de Santé Canada, et non d'une recommandation définitive.*	Variable selon le poids.

Adaptation de la référence[25].

SÉCURITÉ DE LA CAFÉINE ? (75-179 MG/400 MG)

Tableau 6 Teneur en caféine de différents aliments et breuvages

Produit	Taille de la portion		Caféine (mg) (valeurs approximatives)
	once	ml	
Café			
Espresso	1	28	75
Infusé	8	237 (1 tasse)	135
Torréfié et moulu, percolateur	8	237	118
Torréfié et moulu, filtre	8	237	179
Torréfié et moulu, décaféiné	8	237	3
Instantané	8	237	76 - 106
Instantané décaféiné	8	237	5
Thé			
Mélange régulier	8	237	43
Vert	8	237	30
Instantané	8	237	15
En feuilles ou en sachets	8	237	50
Thé décaféiné	8	237	0
Boissons au cola			
Cola régulier	12	355 (1 canette)	36 - 46
Cola diète	12	355	39 - 50
Produits à base de cacao			
Lait au chocolat	8	237	8
Mélange pour chocolat chaud	8	237	5
Friandises, chocolat au lait	1	28 g	7
Friandises, chocolat sucré	1	28 g	19
Chocolat à cuisson, non sucré	1	28 g	25 - 58
Gâteau au chocolat	2,8	80 g	6
Carrés au chocolat (*brownies*)	1,5	42 g	10
Mousse au chocolat	3,2	90 g	15
Pouding au chocolat	5,1	145 g	9

Adaptation de la référence[25].

ET LES BOUTEILLES QUE CONTIENNENT ELLES ? (80-350MG)

Tableau 7 **Quantification de la caféine dans certaines boissons énergisantes régulières et alcoolisées**

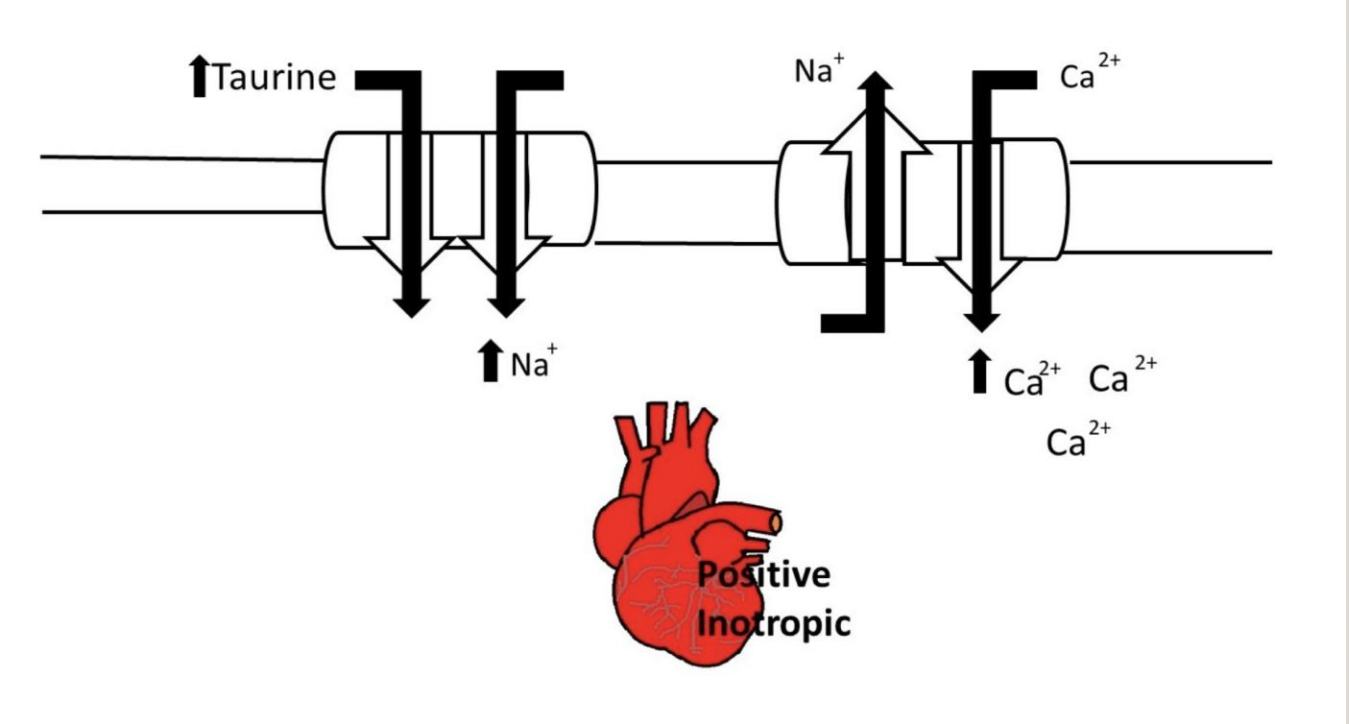
Produit	Format (ml)	Caféine (mg) (d'après l'entreprise)	Caféine (mg) MESURÉE par format original*	Comparatif : Caféine (mg) par 250 ml
BOISSONS ÉNERGISANTES				
Red Bull® régulier Lot #1	250	80	74	74
Red Bull® régulier Lot #2			70	70
Monster Energy Drink : Original Monster® Lot #1	473	164	153	81
Monster Energy Drink : Original Monster® Lot #2			151	80
Guru Full On® Lot #1	355	Extrait guarana	130	91
Guru Full On® Lot #2			143	101
Full Throttle (Coca-Cola Ltd.)® Original, Blue Demon Lot #1	473	141 *(+ 0,7 ml d'extrait guarana)*	138	73
Full Throttle (Coca-Cola Ltd.)® Original, Blue Demon Lot #2			131	69
BOISSONS ÉNERGISANTES CONCENTRÉES				
Energy shots®	75	200 *(+ 50 mg guarana)*	211	703
Hardcore Energize Bullet®	86	300	234	680
Red Line Power Rush®	74	350	386	1305
BOISSONS ÉNERGISANTES ALCOOLISÉES				
Octane 7.0® *(7 % alc./vol.)*	473	125	101	54
Rev bleu® *(7 % alc./vol.)*	330	nd	24	18
Rockstar + Vodka® *(6,9 % alc./vol.)*	473	98	103	54
BOISSONS ALCOOLISÉES CAFÉINÉES				
Baileys l'original boisson à la crème irlandaise® *(17 % alc./vol.)*	s. o.	nd	(0,097 mg/ml)	3 mg/30 ml (1 oz)
Tia Maria boisson diverse® *(20 % alc./vol.)*	s. o.	nd	(0,099 mg/ml)	3 mg/30 ml (1 oz)

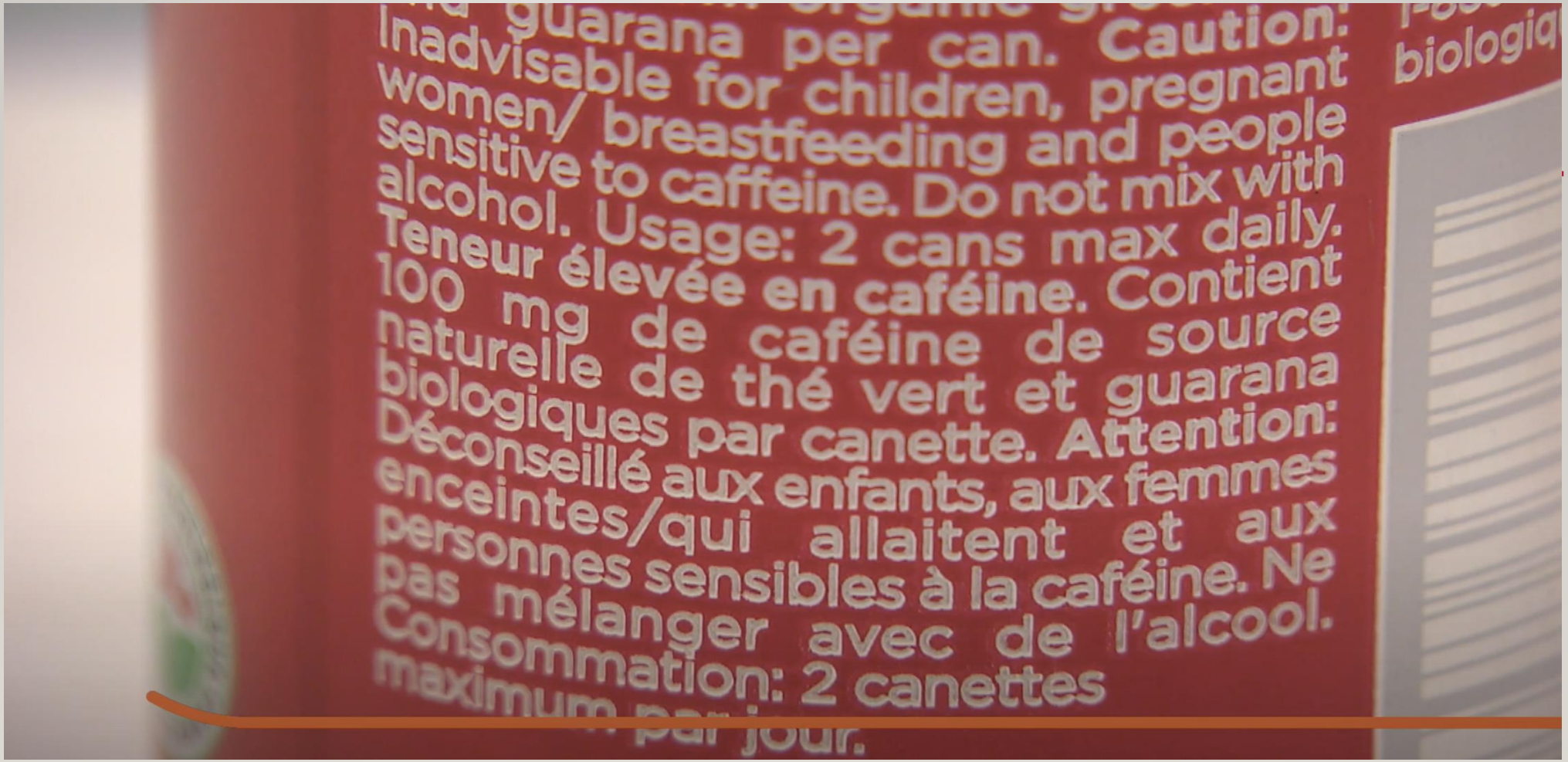
nd : non disponible.

* Dosages effectués au Laboratoire du Centre de Toxicologie du Québec en septembre 2009.

GUARANA /TOXICITÉ CARDIAQUE ? EST-CE QUE LA CAFÉINE CONTENU EST VRAIMENT MESURÉE ?

TAURINE / TOXICITÉ CARDIAQUE ?




guarana per can. Caution:
Inadvisable for children, pregnant
women/ breastfeeding and people
sensitive to caffeine. Do not mix with
alcohol. Usage: 2 cans max daily.
Teneur élevée en caféine. Contient
100 mg de caféine de source
naturelle de thé vert et guarana
biologiques par canette. Attention:
Déconseillé aux enfants, aux femmes
enceintes/qui allaitent et aux
personnes sensibles à la caféine. Ne
pas mélanger avec de l'alcool.
Consommation: 2 canettes
maximum par jour.
biologiq

QUELLE EST LA SÉCURITÉ EFFECTIVE DE L'ADDITION DE CAFÉINE / GUARANA /TAURINE ?


Boissons énergisantes : elle retrouve ses fonctions cardiaques et n'a plus besoin de cœur mécanique
le télé journal

2,4,8


Red Bull
ENERGY DRINK
Red Bull
4 x 250 ml

Canadian Journal of Cardiology 36 (2020) 317.e1–317.e3 www.onlinecjc.ca

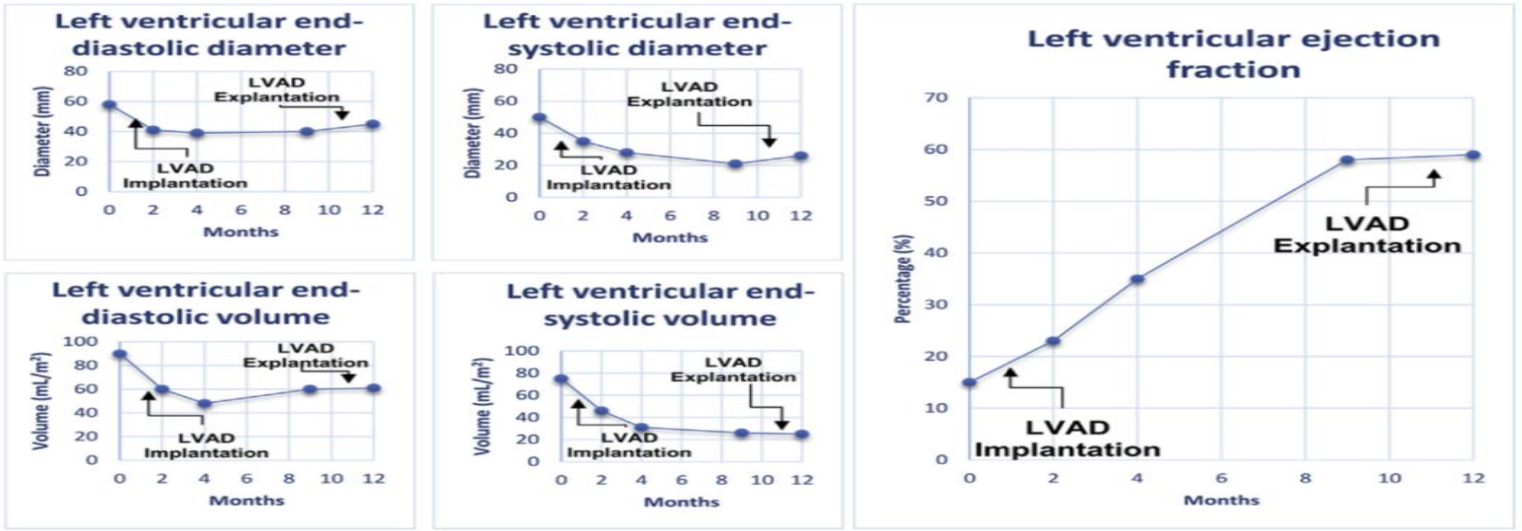
Case Report

Do Energy Drinks Really Give You Wings? Left Ventricular Assist Device Therapy as a Bridge to Recovery for an Energy Drink-Induced Cardiomyopathy

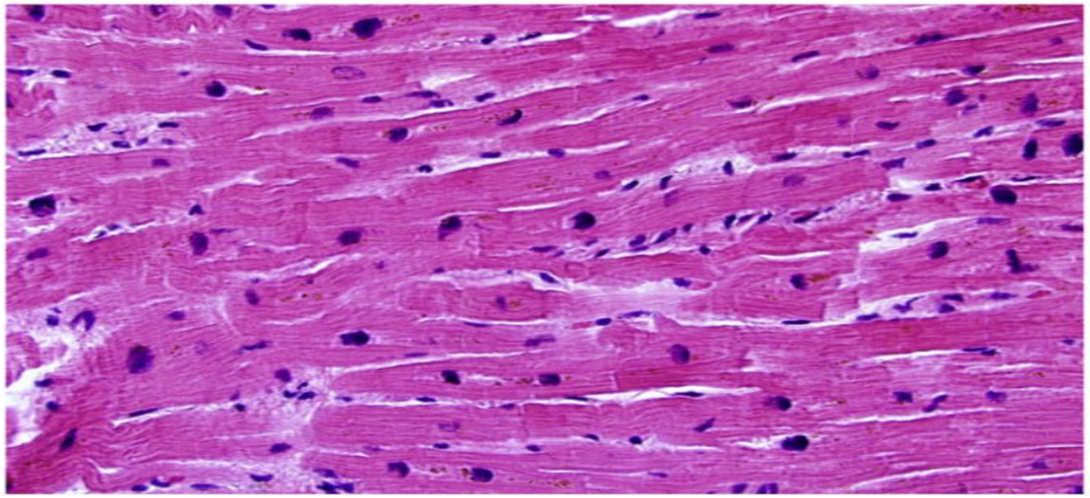
David Belzile, MD, Alexandre Cinq-Mars, MD, Mathieu Bernier, MD, Marie-Hélène Leblanc, MD, Christine Bourgault, MD, Joëlle Morin, MD, Maxime Laflamme, MD, Éric Charbonneau, MD, and Mario Sénéchal, MD

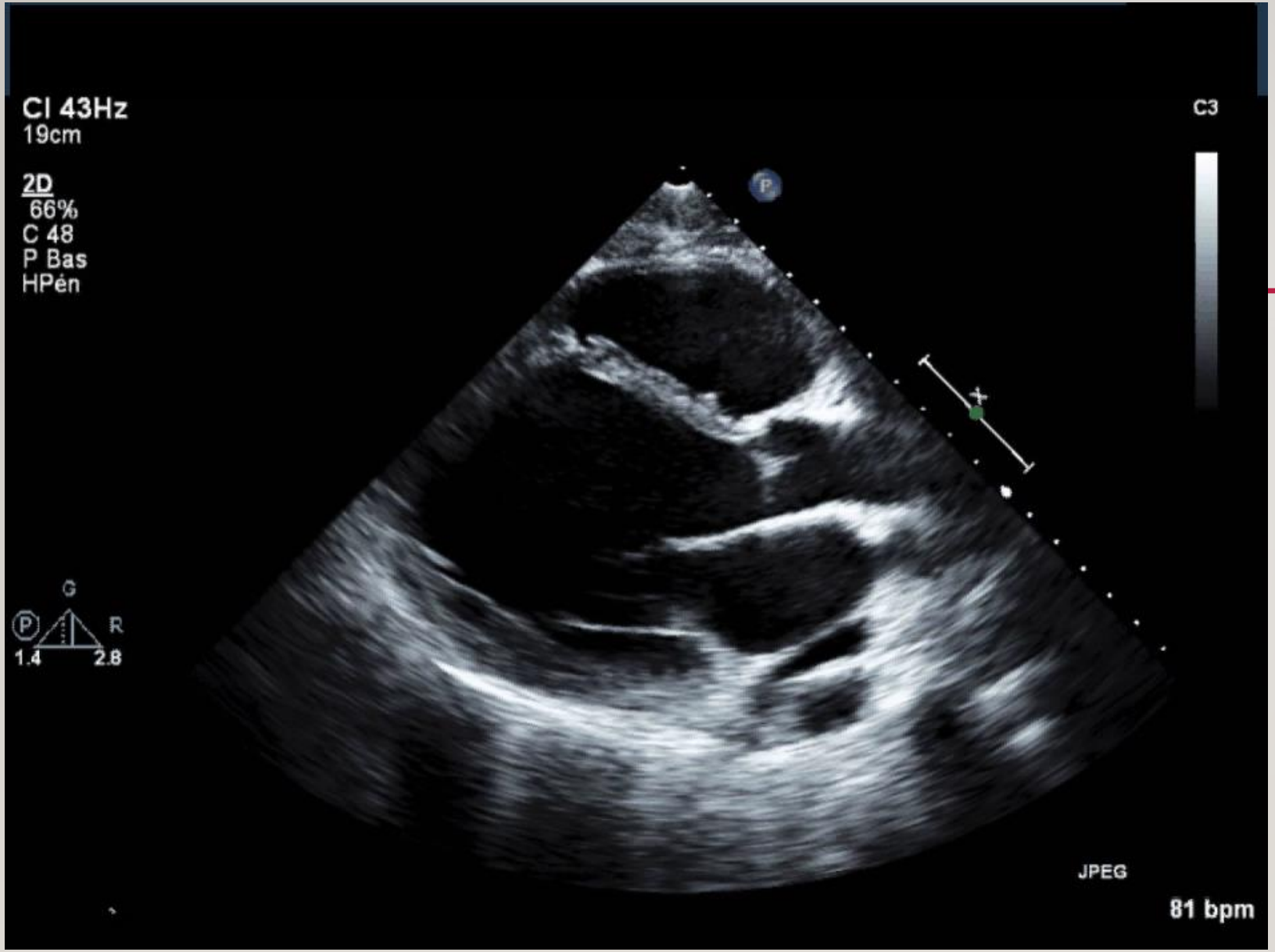
Institut Universitaire de Cardiologie et de Pneumologie de Québec, Québec, Québec, Canada

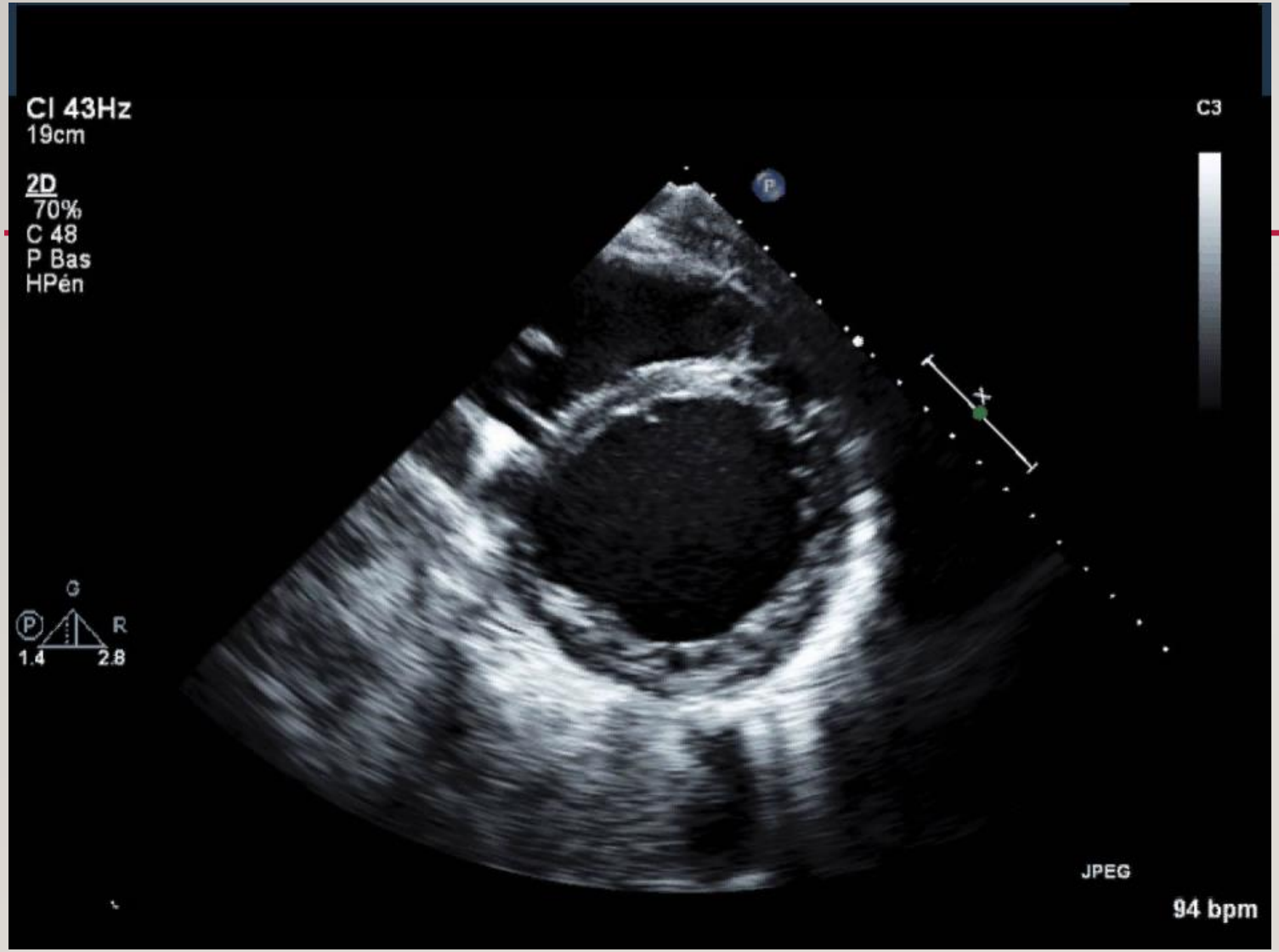
A


Left ventricular end-diastolic diameter
Diameter (mm)
LVAD Explantation
LVAD Implantation
Months
Left ventricular end-systolic diameter
Diameter (mm)
LVAD Explantation
LVAD Implantation
Months
Left ventricular ejection fraction
Percentage (%)
LVAD Explantation
LVAD Implantation
Months
Left ventricular end-diastolic volume
Volume (mL/m²)
LVAD Explantation
LVAD Implantation
Months
Left ventricular end-systolic volume
Volume (mL/m²)
LVAD Explantation
LVAD Implantation
Months

B




CI 43Hz
19cm
2D
66%
C 48
P Bas
HPén
C3
G
P
R
1.4
2.8
JPEG
81 bpm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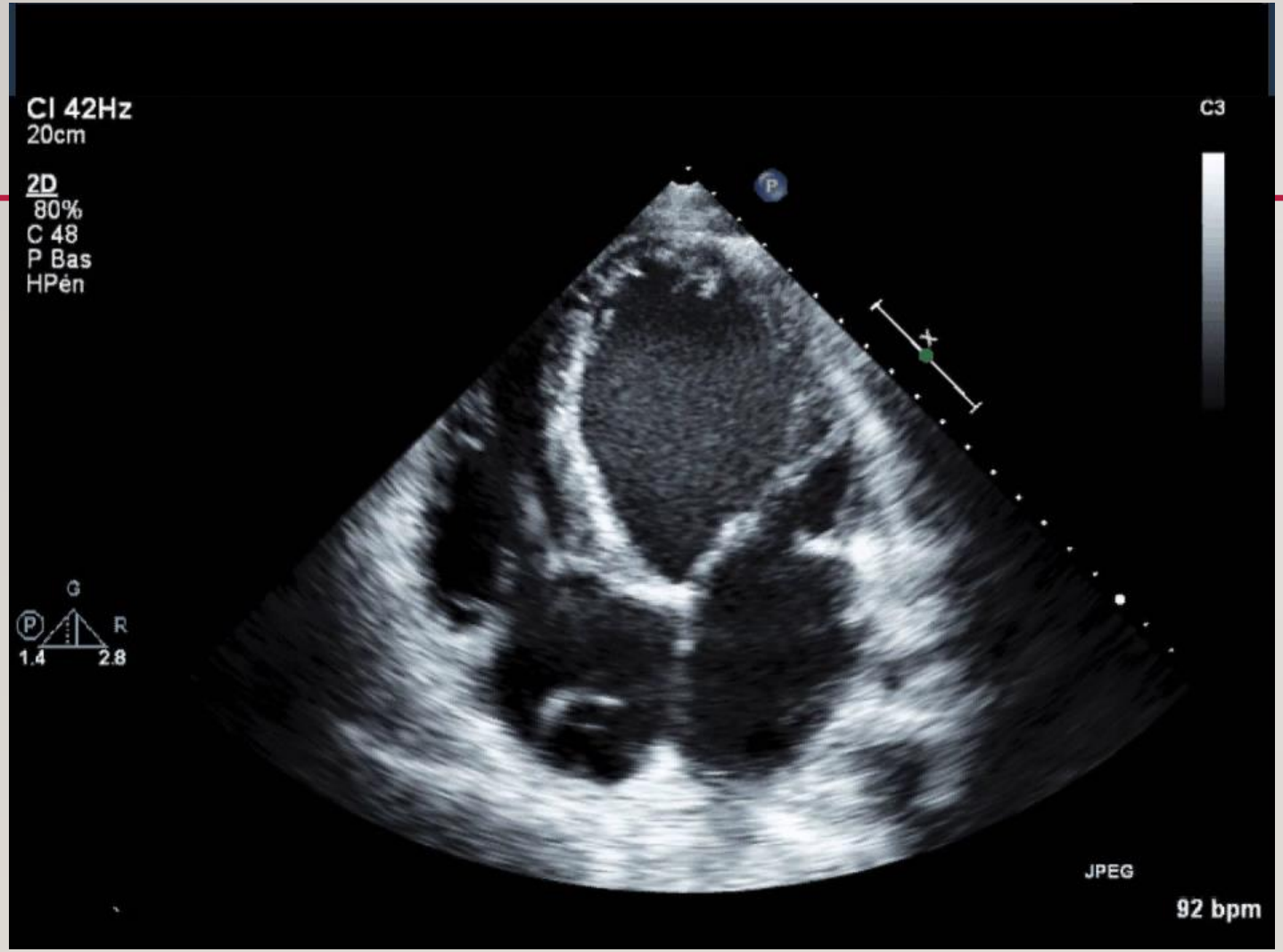
19cm
2D
70%
C 48
P Bas
HPén
C3
G
P
R
1.4
2.8
JPEG
94 bpm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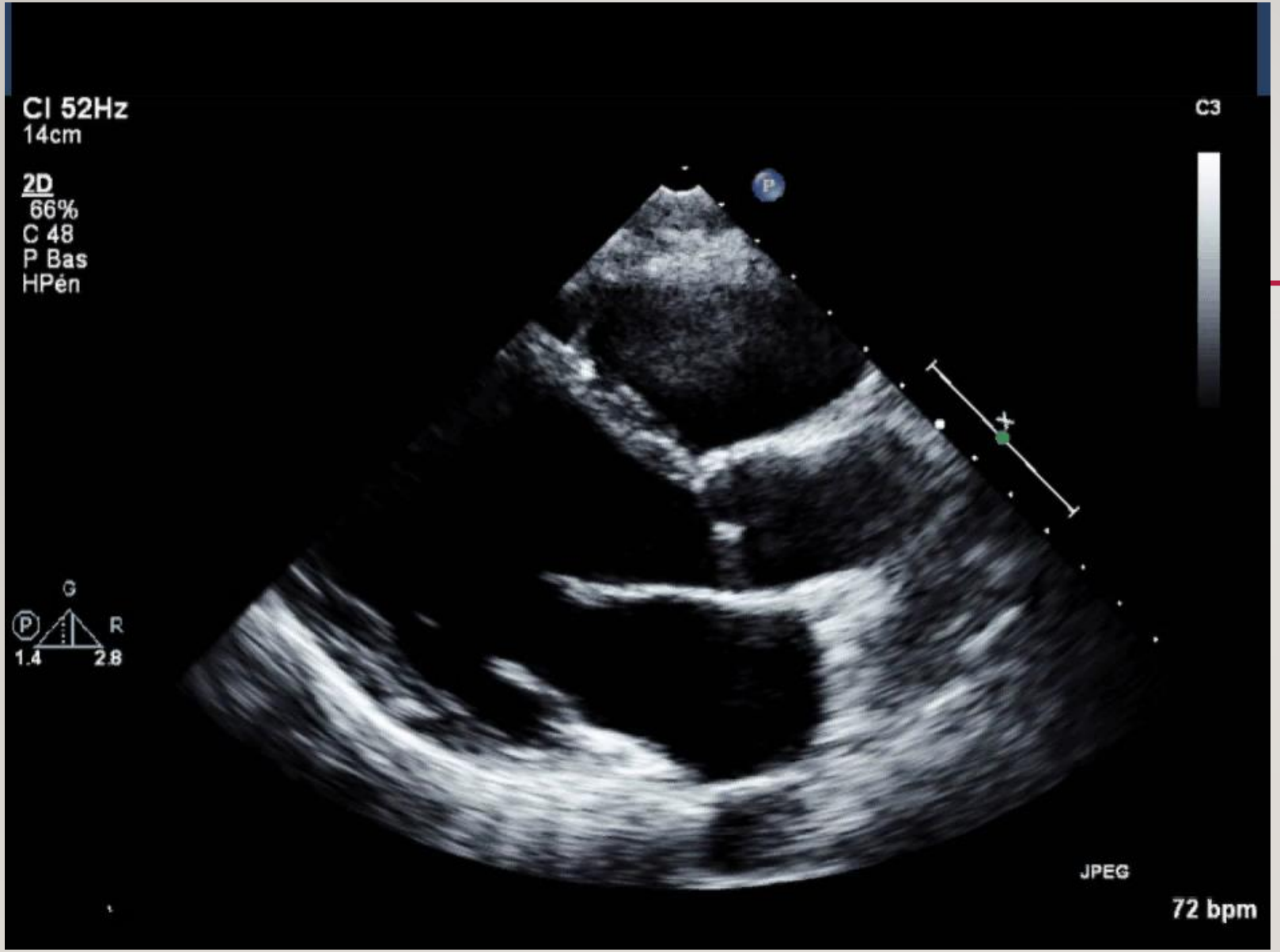
20cm
2D
80%
C 48
P Bas
HPen
C3
G
P
R
1.4
2.8
JPEG
92 bpm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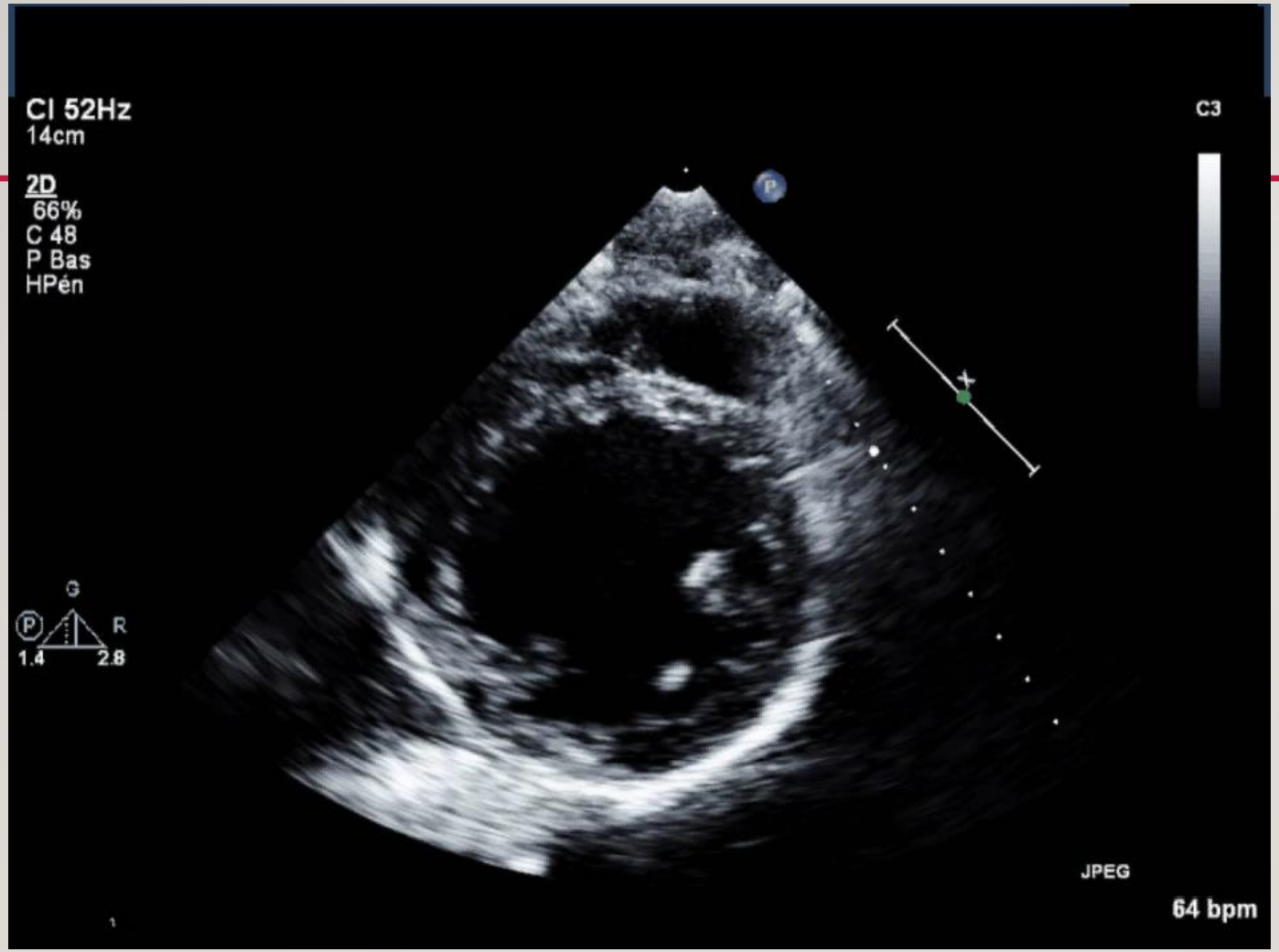
14cm
2D
66%
C 48
P Bas
HPén
C3
G
P
R
1.4
2.8
JPEG
72 bpm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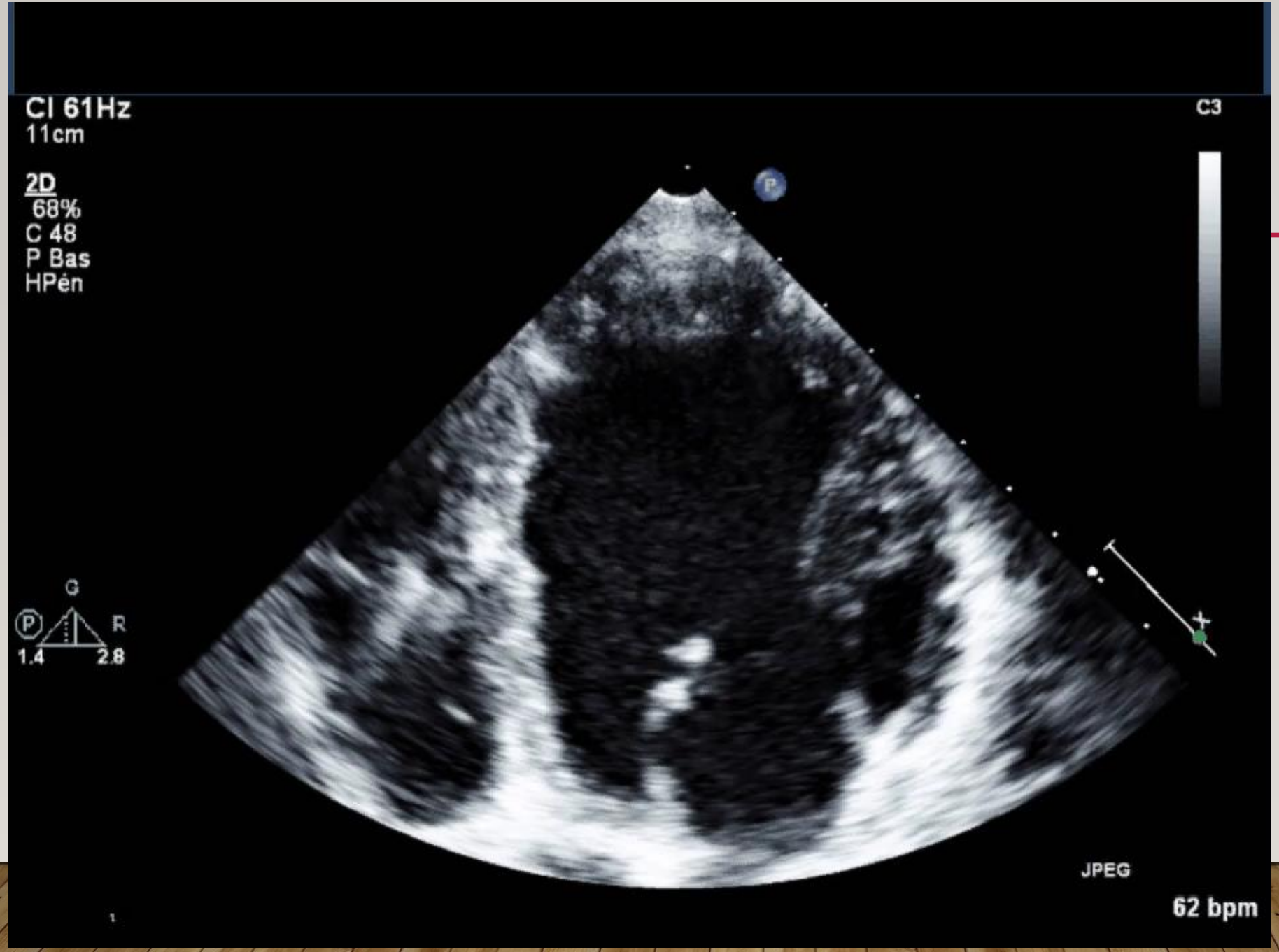
14cm
2D
66%
C 48
P Bas
HPén
C3
C
P
R
1.4
2.8
JPEG
64 bpm


CI 61Hz
11cm
2D
68%
C 48
P Bas
HPén
C3
G
P
R
1.4
2.8
JPEG
62 bpm

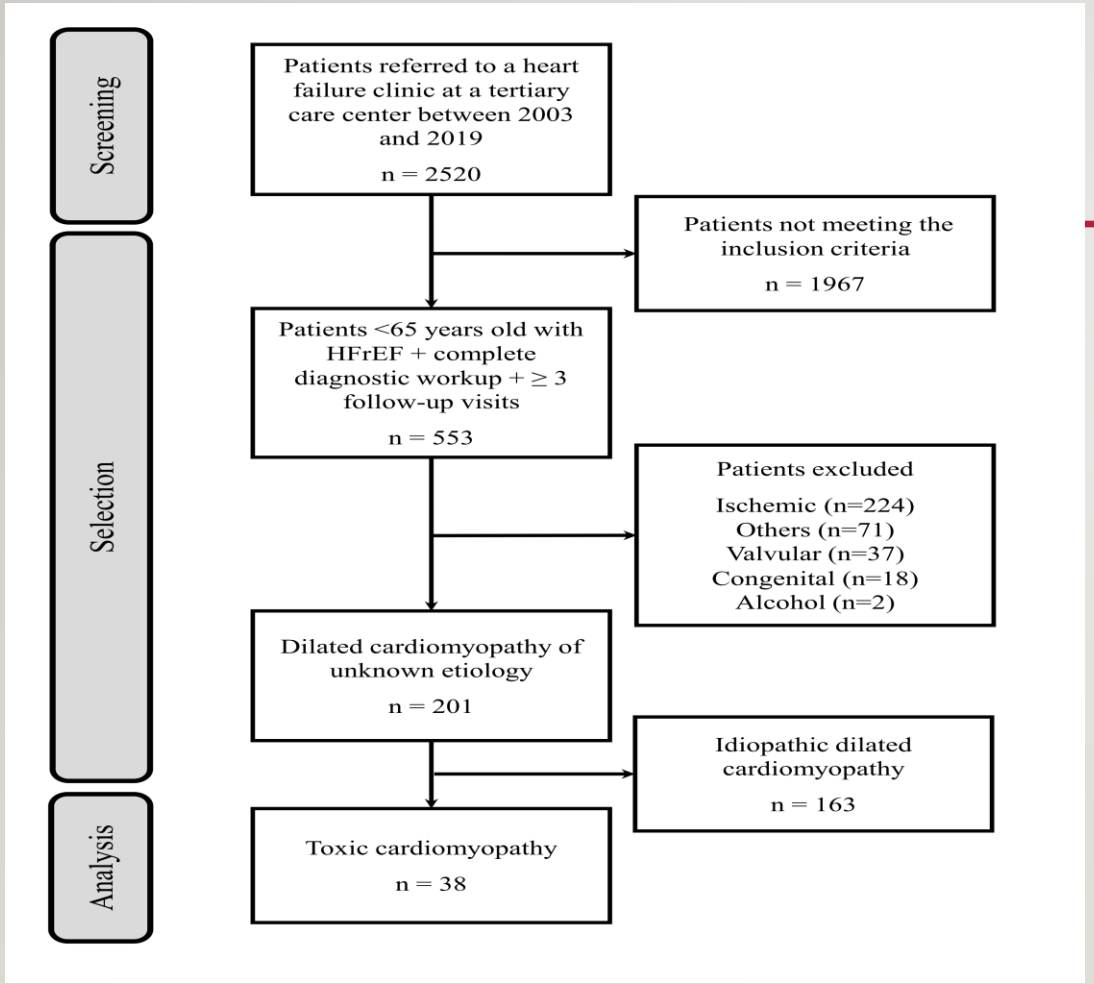

CARDIO
VIRTUEL
QUIZ
Sébastien Bergeron, M.D
Cardiologue

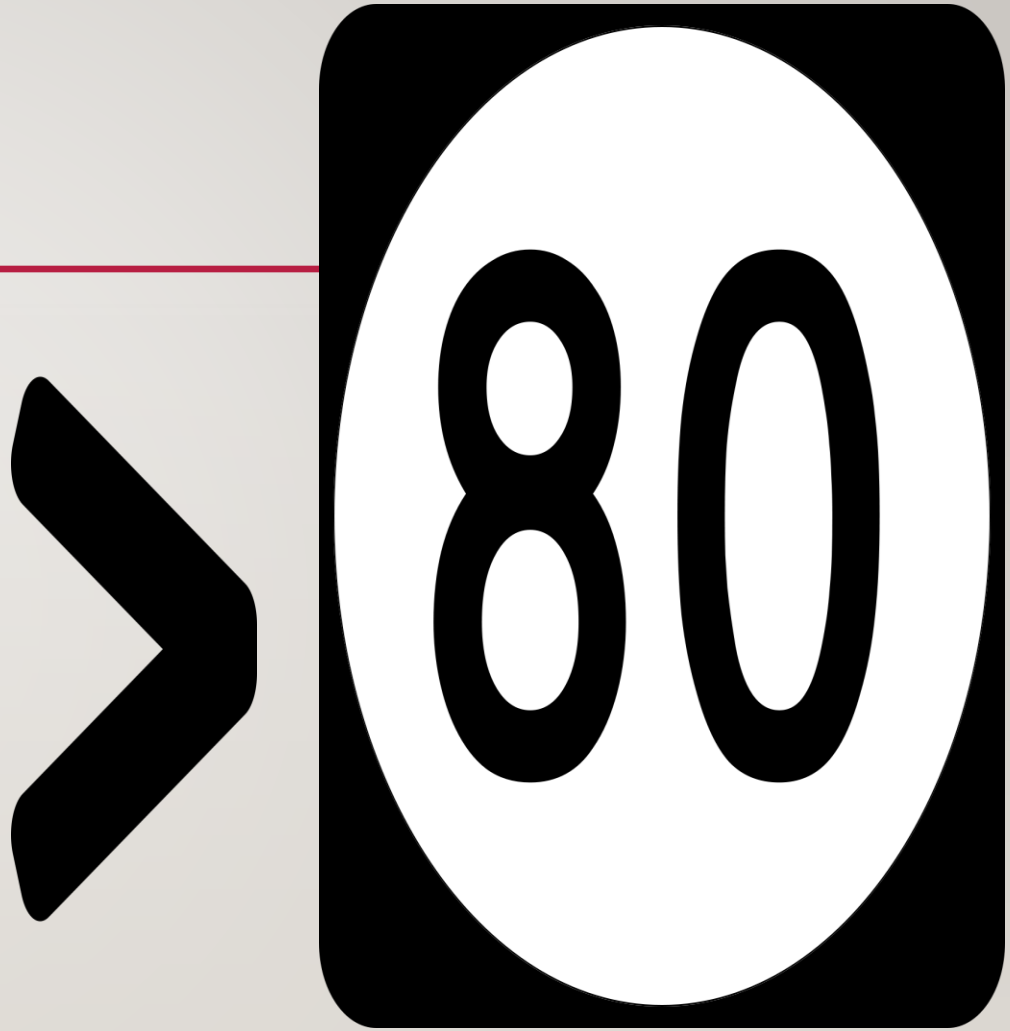
Heavy burden of toxic dilated cardiomyopathy among young adults: A retrospective study and review of the literature

Alexandre Cinq-Mars MD [a], Montse Massot MD [a], David Belzile MD [a], Pierre Yves Turgeon MD [a], Sacha-Michelle Dubois-Sénéchal [b], Claudine Laliberté BScN [a], Marie-Ève Komlosy BScN [a], Marie-Hélène Leblanc MD [a], Sébastien Bergeron MD [a], Kim O'Connor MD [a], Joëlle Morin MD [a], Christine Bourgault MD [a], Mathieu Bernier MD [a], Jonathan Beaudoin MD [a], Steve Radermaker MD [c], Maxime Laflamme MD [d], Eric Charbonneau MD [d] and Mario Sénéchal MD [a]

[a] From the Department of Cardiology, [b] Research Center, [c] Department of Psychiatry, and [d] Department of Cardiac Surgery, Institut Universitaire de Cardiologie et de Pneumologie de Québec, Laval University, Quebec City, Canada.

July 12, 2021

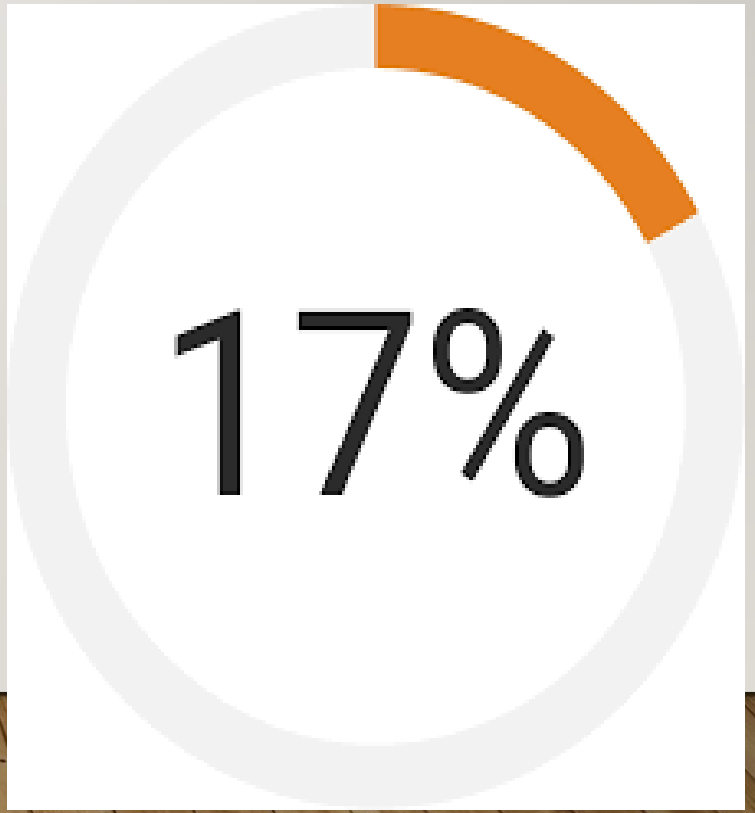

Screening
Selection
Analysis
Patients referred to a heart failure clinic at a tertiary care center between 2003 and 2019
n = 2520
Patients not meeting the inclusion criteria
n = 1967
Patients <65 years old with HFrEF + complete diagnostic workup + ≥ 3 follow-up visits
n = 553
Patients excluded
Ischemic (n=224)
Others (n=71)
Valvular (n=37)
Congenital (n=18)
Alcohol (n=2)
Dilated cardiomyopathy of unknown etiology
n = 201
Idiopathic dilated cardiomyopathy
n = 163
Toxic cardiomyopathy
n = 38


80

TABLES

Table 1. Patients' characteristics at initial presentation.

Characteristics	Patients (n= 38)
Age, mean ± SD	40±9
< 45 years old (%)	27 (71)
≥ 45 to 65 years old (%)	11 (29)
Male sex, n (%)	35 (92)
Main substance use, n (%)	
Amphetamine	19 (50)
Cocaine	14 (37)
Anabolic steroids	3 (8)
Energy drinks	2 (5)
Significant co-ingestion, n (%)	35 (92)
Smoker, n (%)	33 (87)
Alcohol, n (%)	26 (68)
Diabetes, n (%)	3 (8)
Creatinine, mean ± SD (µmol/L) [normal: 40-90 µmol/L]	96±43
ECG	
QRS width (ms)	110±25
LBBB, n (%)	6 (16)
NYHA, n (%)	
Class 1	0 (0)
Class 2	14 (37)
Class 3	14 (37)
Class 4	10 (26)
NTproBNP, mean ± SD (ng/L) [normal: 0-300 ng/L]	5010±3994
LVEF, mean ± SD	17±8
Main clinical presentation, n (%)	
Dyspnea	26 (68)



Dizziness	3 (8)
Fatigue	2 (5)
Syncope	2 (5)
Chest pain	2 (5)
Cough	1 (3)
Palpitations	1 (3)
Embolic event	1 (3)
Cardiogenic shock, n (%)	8 (21)

Acronyms: GDMT: guideline-directed medical therapy, LVEF: left ventricular ejection fraction, NYHA: New York Heart Association.

CHOC CARDIOGÉNIQUE …

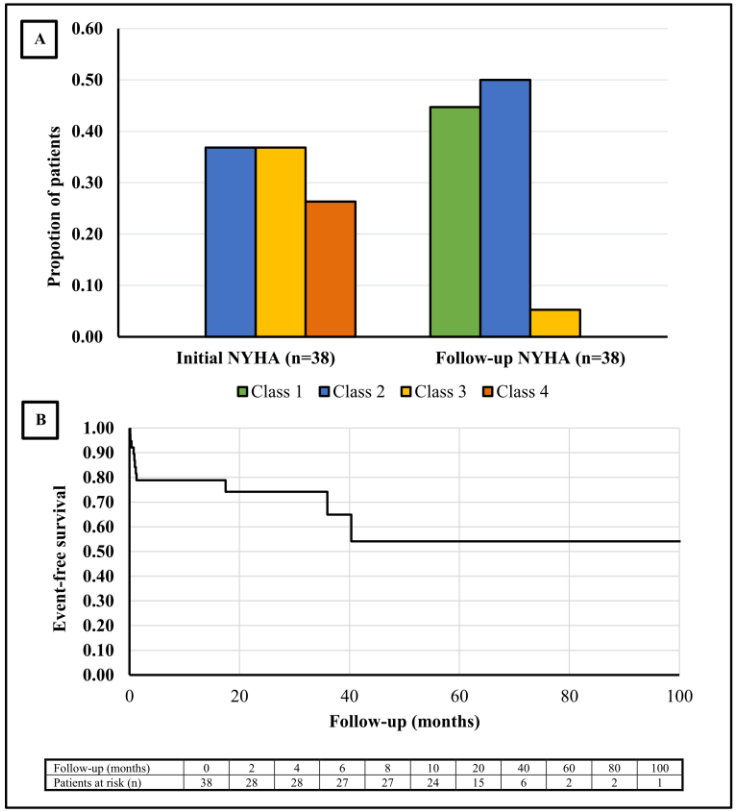
Table 2. Initial diagnostic workup and treatment orientation.

Investigation and management	Patients (n= 38)
Diagnostic work-up, n (%)	
Coronary angiogram	33 (87)
Nuclear imaging stress test without coronary angiogram	1 (3)
Cardiac magnetic resonance	34 (90)
Treatment orientation, n (%)	
GDMT alone	30 (79)
LVAD + GDMT	7 (18)
ECMO + HT + GDMT	1 (3)
Device, n (%)	
ICD	10
CRT + ICD	9

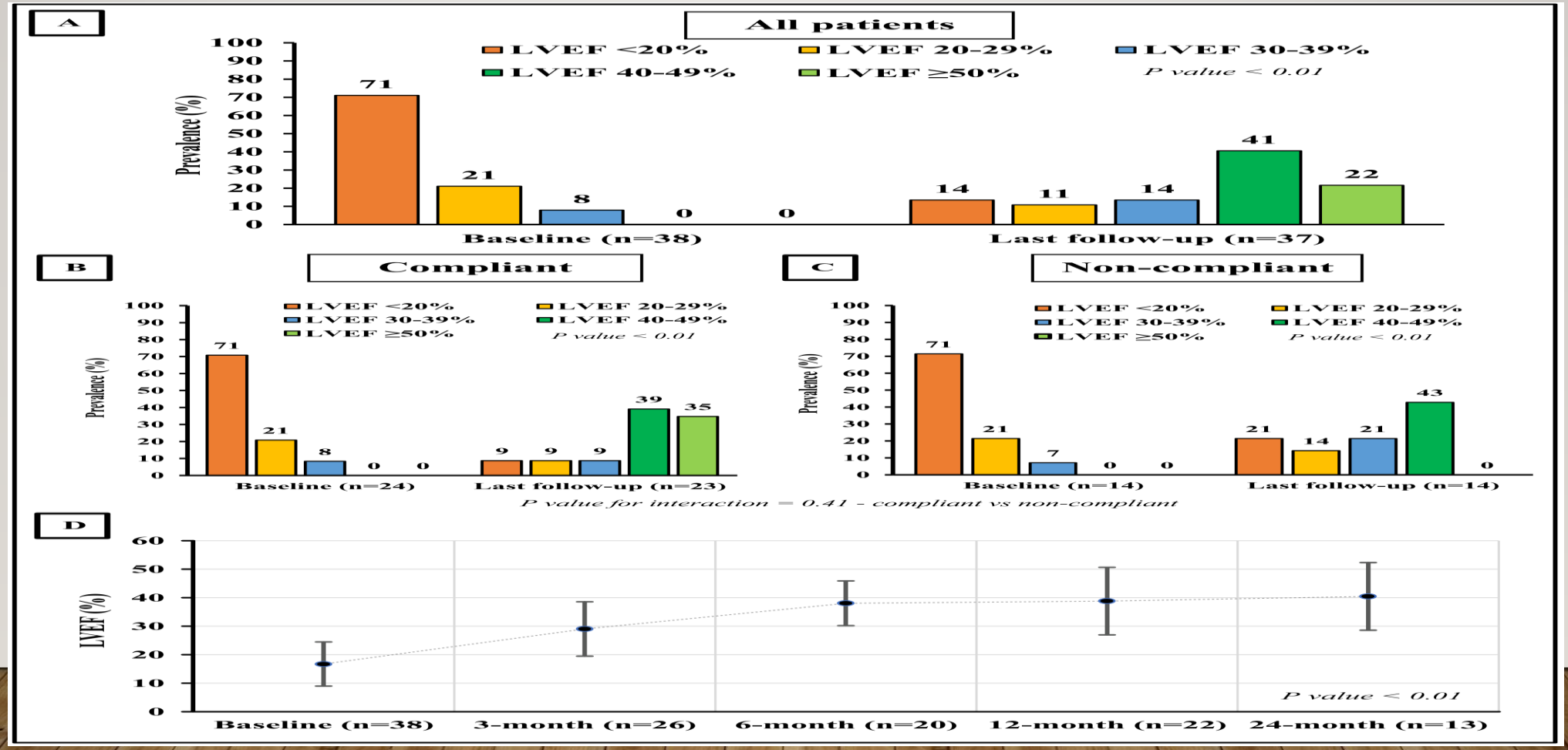
Acronyms: ECMO: extracorporeal membrane oxygenation, CRT: cardiac resynchronization therapy, HT: heart transplantation, ICD: implantable cardioverter defibrillator, LVAD: left ventricular assist device.

THÉRAPIE AVANCÉE …

CLASSE 3-4 NYHA ÉVOLUE VERS CLASSE 1-2 …. >95 %!



FE >40% À 2 ANS SELON ABSTINENCE , 74% VS 43% !



Is your patient at risk of difficult follow-up?

Does the patient have a job ?

Does the patient accept counseling/psychological support and to stop all consumption ?

Has the patient's consumption lasted for more than 5 years ?

Does the patient participate in illegal activities related to illicit drugs?

Table 7. Non-compliance predictors.

Predictor of non-compliance		% of non-compliant patients
Factors		
Employment	Employed: 25 patients (66%)	16%
	Not employed: 10 patients (26%)	80%
	Unknown: 3 patients (8%)	-
Drug use duration	< 5 years: 20 patients (53%)	15%
	≥ 5 years: 14 patients (37%)	64%
	Unknown: 4 patients (11%)	-
Drug trafficking	No: 30 patients (79%)	23%
	Yes: 3 patients (8%)	100%
	Unknown: 5 patients (13%)	-
Counseling and psychological support	Accept: 23 patients (61%)	22%
	Refuse: 8 patients (21%)	88%
	Unknown: 7 patients (18%)	-
Combination of negative factors		
0 factor		0/17 (0%)
1 factor		5/11 (45%)
≥2 factors		7/7 (100%)

Definition of non-compliant patient: Relapse or ≥3 missed medical appointments.

SI 2 FACTEURS DE RISQUE ….

APRÈS 2 ANS …

Table 3. Echocardiographic parameters evolution of patients with toxic cardiomyopathy.

		Baseline (n=38)	Last follow-up (n=37)	*p* value
LVEF mean (%)		17±7	39±13	<0.01
LVEDD mean (mm)		66±8	60±10	<0.01
LVESD mean (mm)		58±9	47±11	<0.01
LVEDV mean (ml)		225±86	167±78	<0.01
LVEDV indexed (ml/m²)		114±44	84±41	<0.01
LVESV mean (ml)		186±84	115±77	<0.01
LVESV indexed (ml/m²)		94±43	58±41	<0.01
TAPSE mean (mm)		16±5	18±3	0.08
MR	**none-mild (%)**	34	78	<0.01
	moderate (%)	32	14	
	severe (%)	34	8	

Data are presented as mean ± standard deviation unless specified otherwise. * Echocardiographic data not included for 1 patient due to heart transplantation. **Acronyms**: LVEDD: left ventricular end-diastolic diameter, LVEDV: left ventricular end-diastolic volume, LVEF: left ventricular ejection fraction, LVESD: left ventricular end-systolic diameter, LVESV: left ventricular end-systolic volume, MR: mitral regurgitation, TAPSE: tricuspid annular plane systolic excursion.

PARADOXE ET CŒUR / LVAD ?

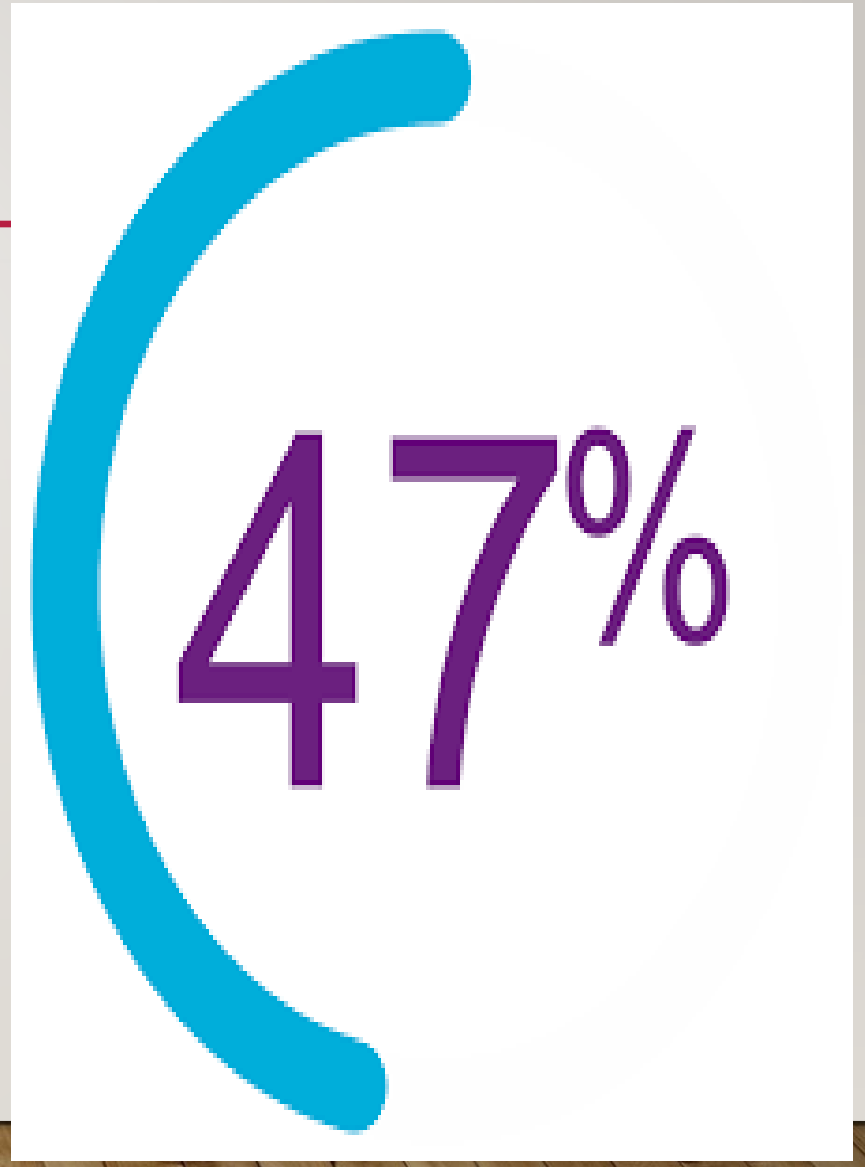
“Le cœur a ses raisons que la raison ne connaît point.”

Blaise Pascal, dans *Pensées*.

Table 6. Echocardiographic evolution with LVAD therapy.

TTE timing	TTE parameters				
	LVEF (%)	LVEDD (mm)	LVESD (mm)	LVEDV (mL/m^2)	LVESV (mL/m^2)
Pre-LVAD*	11±3	66±4	61±5	105±24	94±23
LVAD minimal support†	50±8	53±9	35±10	59±12	31±8
Post-LVAD††	47±7	50±8	37±8	57±17	30±9
Last follow-up‡	49±4	57±6	43±5	65±14	35±7

Data are presented as mean ± standard deviation. *TTE immediately before LVAD implantation †TTE ramp-down before explantation ††TTE immediately after LVAD explantation ‡Last TTE performed – average time since TTE explantation: 16±21 months. **Acronyms**: LVEDD: left ventricular end-diastolic diameter, LVEDV: left ventricular end-diastolic volume, LVEF: left ventricular ejection fraction, LVESD: left ventricular end-systolic diameter, LVESV: left ventricular end-systolic volume.



TEMPS ENTRE INSTALLATION /EXPLANTATION EN MOIS :

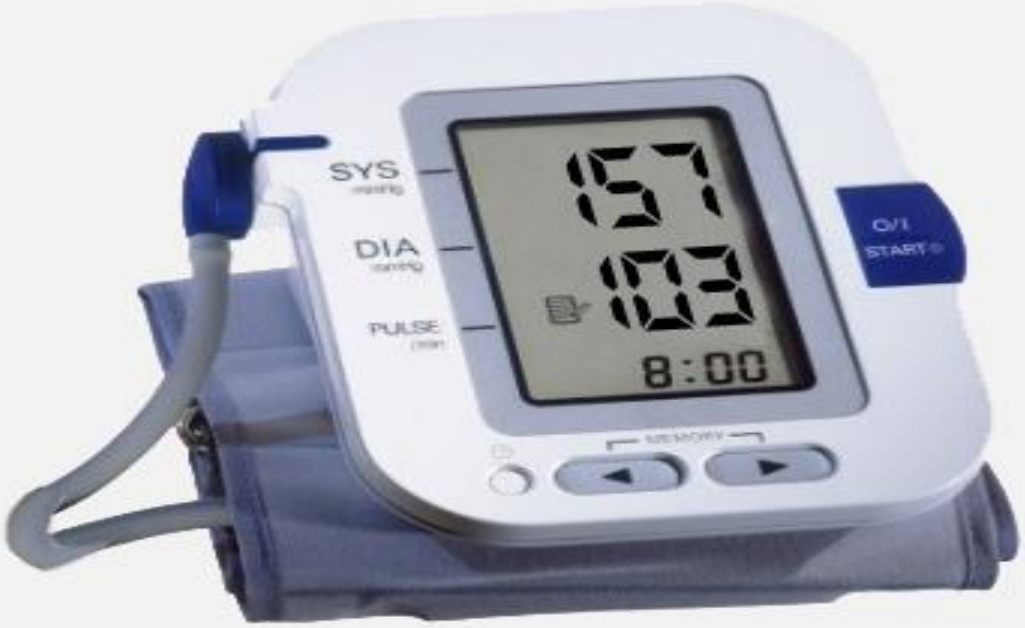
Table 5. Mechanical circulatory support in toxic cardiomyopathy.

#	Main substance abuse	Initial LVEF (%)	Final LVEF (%)	Psychosocial parameters						Therapy	Final outcome
				Job	Substance use duration	Drug trafficking	Detox acceptance	Missing APPT	Relapse		
1	Cocaine	10	50	Yes	<5 years	No	Yes	No	No	LVAD (18 months)	Alive and explanted
2	Amphetamine	10	45	No	>5 years	Yes*	No*	Yes	Yes	LVAD (14 months)	Alive and LVAD decommission
3	Amphetamine	8	45	Yes	<5 years	No	Yes	No	No	LVAD (9 months)	Alive and explanted
4	Amphetamine	15	-	Yes	<5 years	No	Yes	No	No	ECMO+HT	Alive
5	Amphetamine	11	50	Yes	<5 years	No	Yes	No	No	LVAD (11 months)	Alive and explanted
6	Energy drink	7	45	Yes	>5 years	No	Yes	Yes	Yes	LVAD (17 months)	Alive and LVAD decommission
7	Energy drink	16	55	Yes	>5 years	No	Yes	No	No	LVAD (10 months)	Alive and explanted
8	Anabolic androgenic steroids	15	45	Yes	<5 years	No	Yes	No	No	LVAD (5 months)	Alive and explanted

Acronyms: APPT: appointment, ECMO: extracorporeal membrane oxygenation, HT: heart transplantation, LVAD: left ventricular assist device, LVEF: left ventricular ejection fraction. **Unknown at the time of LVAD implantation*


le télé journal
AMPHÉTAMINES ET INSUFFISANCE CARDIAQUE

HTA ET INSUFFISANCE CARDIAQUE ?



PAM= DC x RPT

Pression artérielle moyenne (ΔP)

Débit cardiaque

Résistances périphériques totales

La pression artérielle est générée par la pompe cardiaque
elle dépend donc de la masse sanguine et la contraction cardiaque.

Débit cardiaque = Fréquence cardiaque (Fc) x Volume d 'Ejection (VE)
débit normal au repos : 5L/min Fc= 70-72 bpm et VE = 70-75 ml

Le débit cardiaque peut varier
si la fréquence ou le volume systolique varient.

Canadian Journal of Cardiology
Volume 36 2020

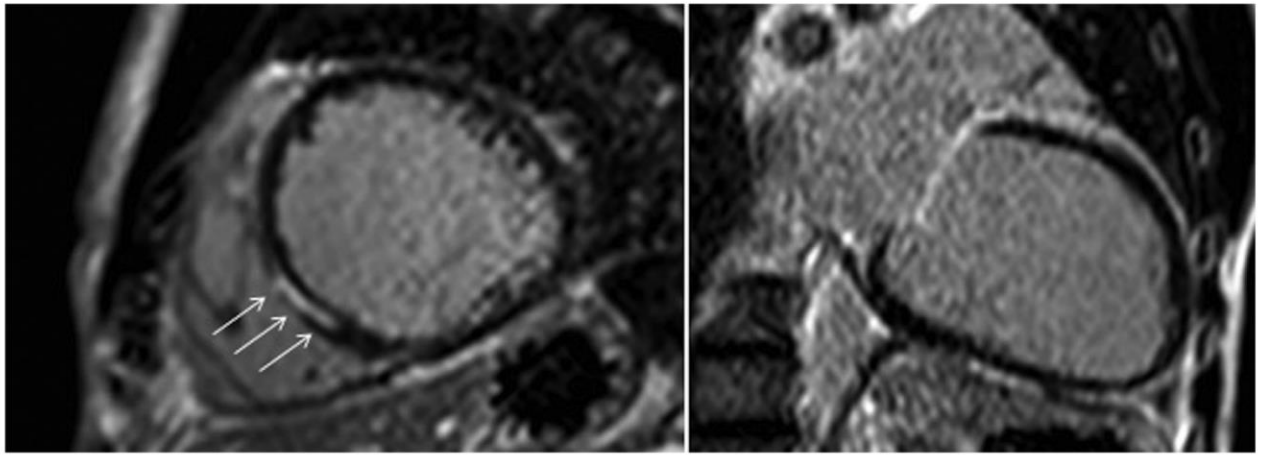
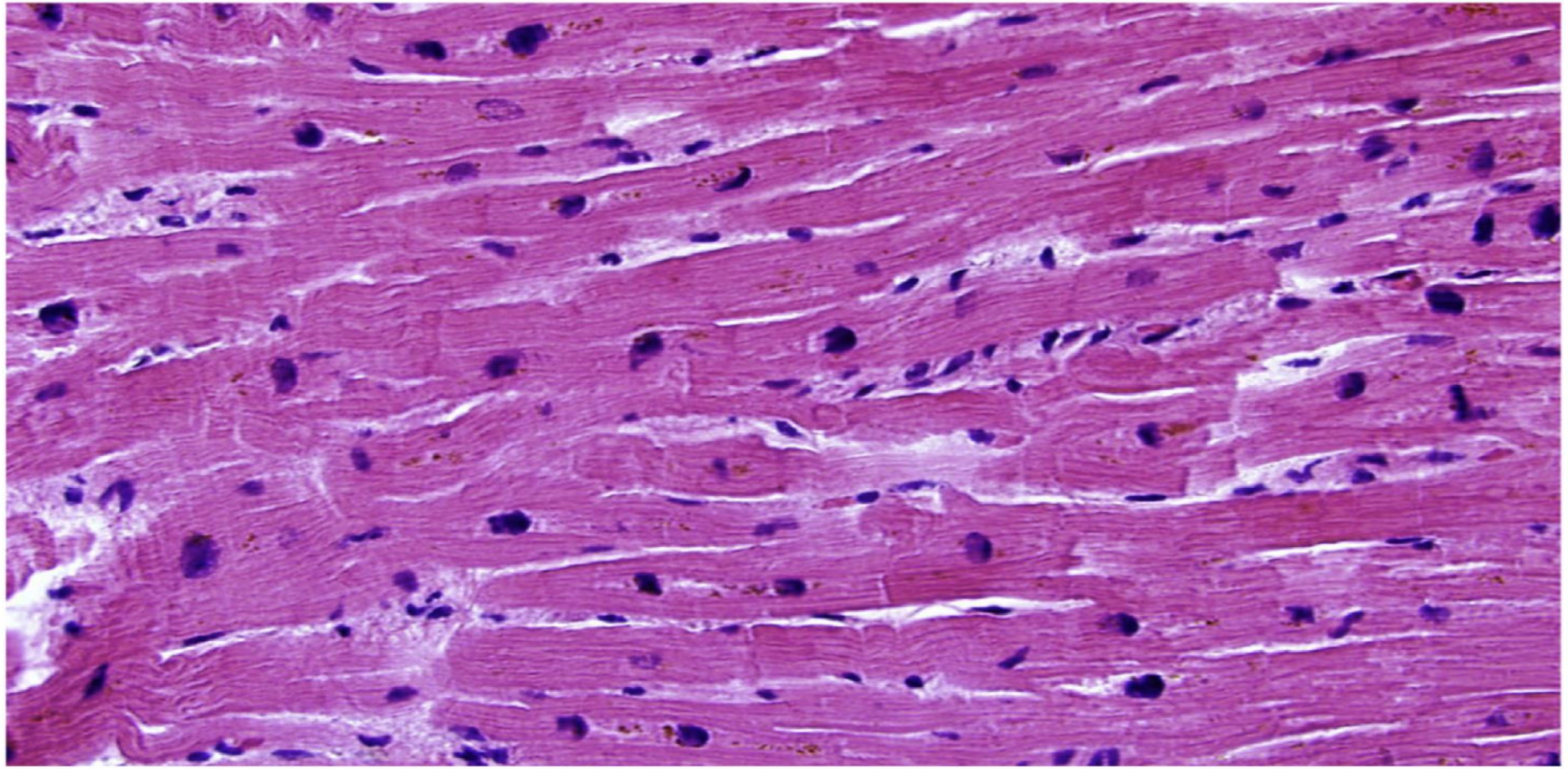
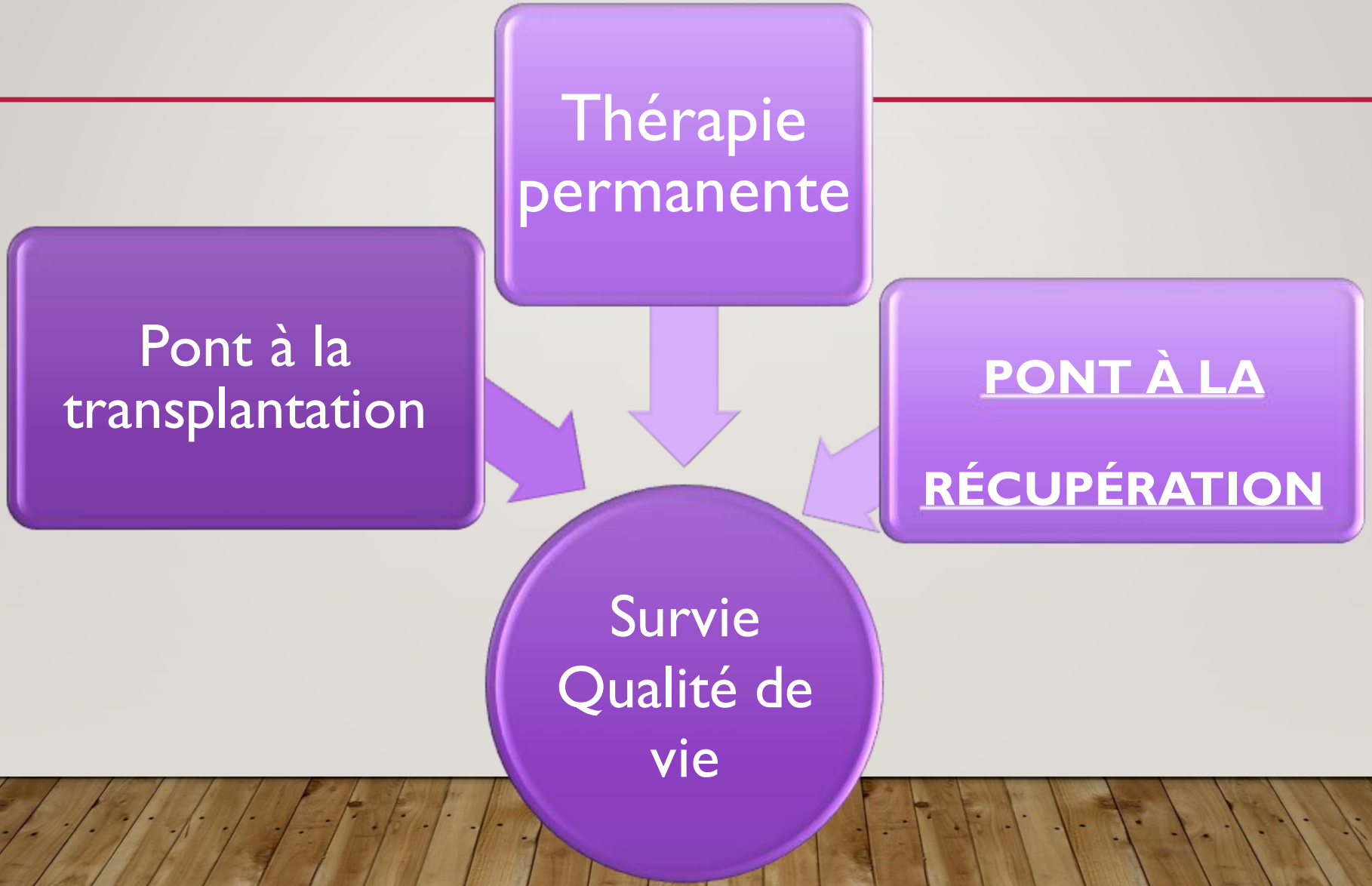


Figure 1. Cardiac magnetic resonance imaging (MRI) scan demonstrating a small focus of septal mid-myocardial late gadolinium enhancement consistent with nonischemic cardiomyopathy. (**Left**) Short axis. (**Right**) Two chambers.



LVAD ….


Thérapie permanente
Pont à la transplantation
PONT À LA RÉCUPÉRATION
Survie
Qualité de vie

Review Article on Heart Failure in the Young and Old: Insights into Various Therapies

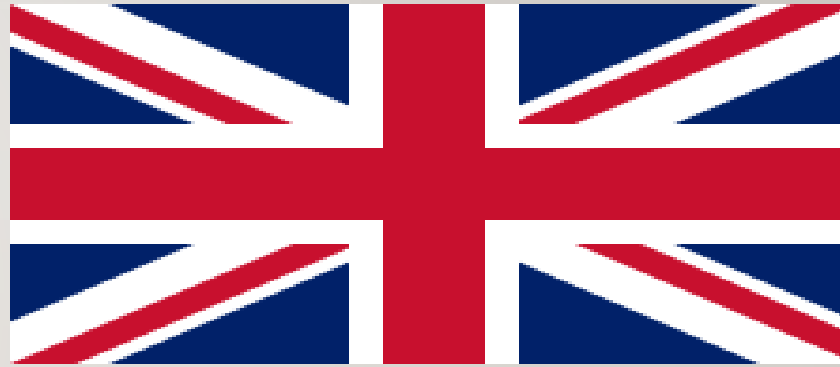
Weaning from ventricular assist device support after recovery from left ventricular failure with or without secondary right ventricular failure

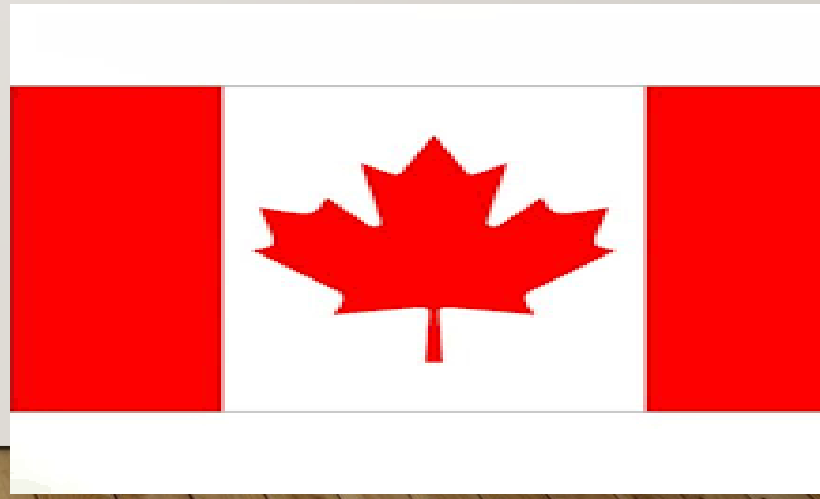
Michael Dandel[1], Mariano Francisco del Maria Javier[2], Eva Maria Javier Delmo[3], Matthias Loebe[4], Roland Hetzer[2]

[1]Department of Cardiology, Cardio Centrum Berlin, Berlin, Germany; [2]Department of Cardiothoracic and Vascular Surgery, Cardio Centrum Berlin, Berlin, Germany; [3]Charité-Universitätsmedizin Berlin, Charité Research Organization, Berlin, Germany; [4]Thoracic Transplant and Mechanical Support, Miami Transplant Institute, Memorial Jackson Health System, University of Miami, Miami, Florida, USA

Contributions: (I) Conception and design: All authors; (II) Administrative support: None; (III) Provision of study materials or patients: All authors; (IV) Collection and assembly of data: All authors; (V) Data analysis and interpretation: All authors; (VI) Manuscript writing: All authors; (VII) Final approval of manuscript: All authors.

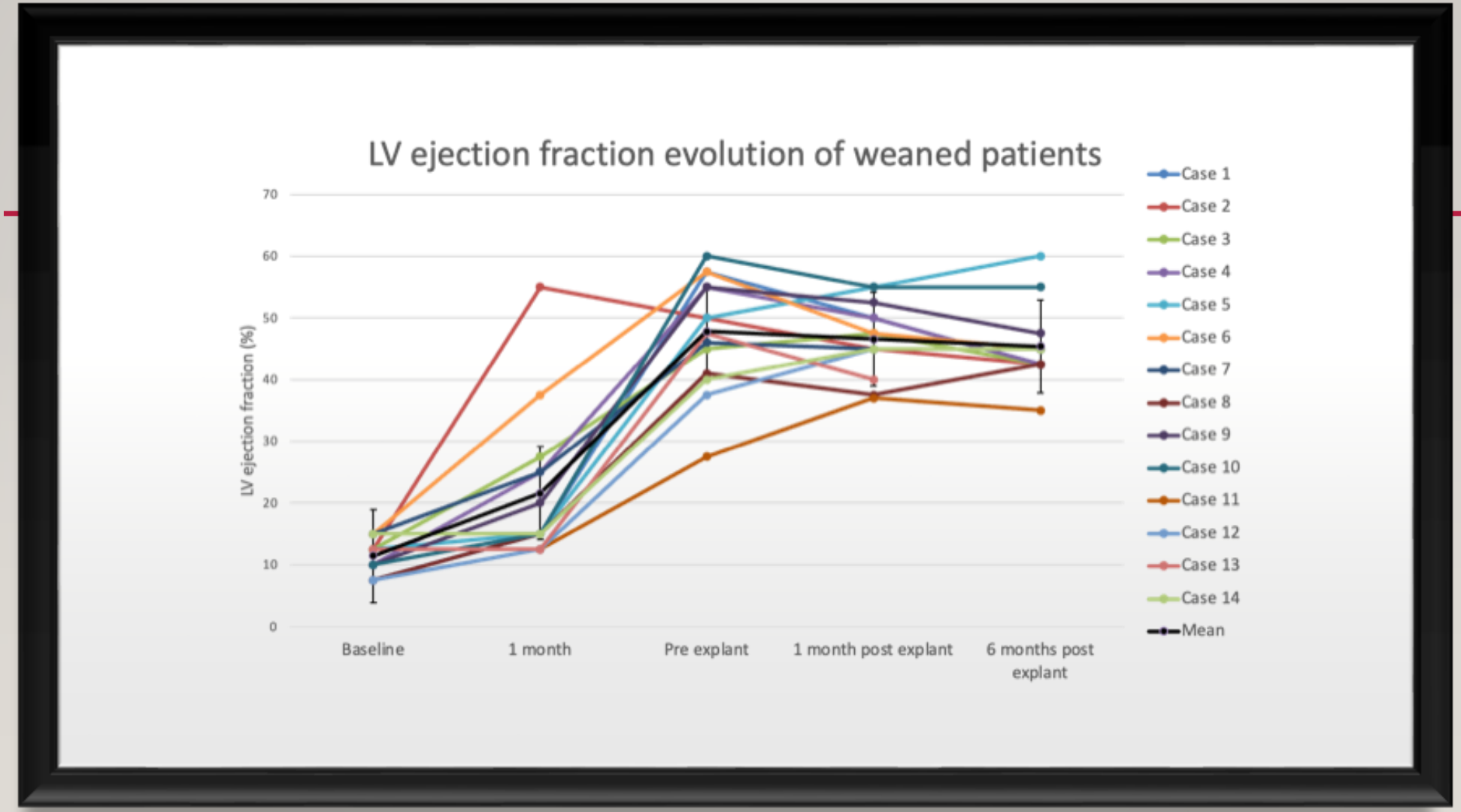
Correspondence to: Michael Dandel, MD, PhD. Department of Cardiology, Cardio Centrum Berlin, Berlin, Germany. Email: mdandel@aol.com.






14


71%


LV ejection fraction evolution of weaned patients
LV ejection fraction (%)
70
60
50
40
30
20
10
0
Baseline
1 month
Pre explant
1 month post explant
6 months post explant
Case 1
Case 2
Case 3
Case 4
Case 5
Case 6
Case 7
Case 8
Case 9
Case 10
Case 11
Case 12
Case 13
Case 14
Mean

AMBULATORY CONTINUOUS INOTROPES AS A BRIDGE-TO-RECOVERY IN ADVANCED HEART FAILURE ATTRIBUTED TO AMPHETAMINE INDUCED CARDIOMYOPATHY …

- Amphetamine-induced cardiomyopathy is increasingly common among young adults. We report a case of a 32-year-old man with a long history of amphetamine consumption who presented to hospital in cardiogenic shock. We discuss home ambulatory inotropic therapy as a bridge to recovery and the importance of defibrillator installation in this population.

Ambulatory Inotrope Infusions in Advanced Heart Failure

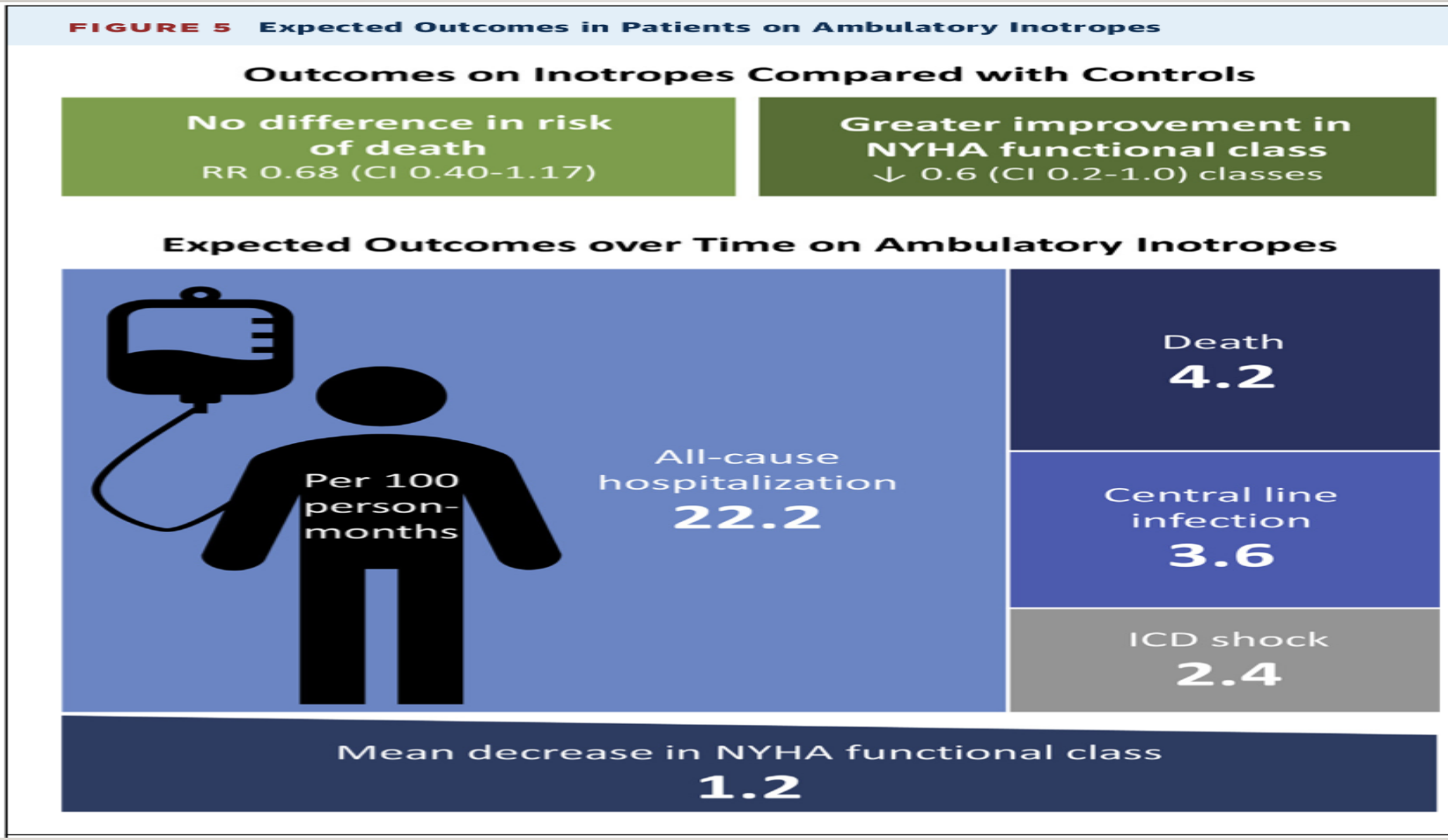
A Systematic Review and Meta-Analysis

Tiana Nizamic, MD,[a] M. Hassan Murad, MD,[b] Larry A. Allen, MD, MHS,[c] Colleen K. McIlvennan, DNP, ANP,[c] Sara E. Wordingham, MD,[d] Daniel D. Matlock, MD, MPH,[e] Shannon M. Dunlay, MD, MS[f]

JACC: HEART FAILURE

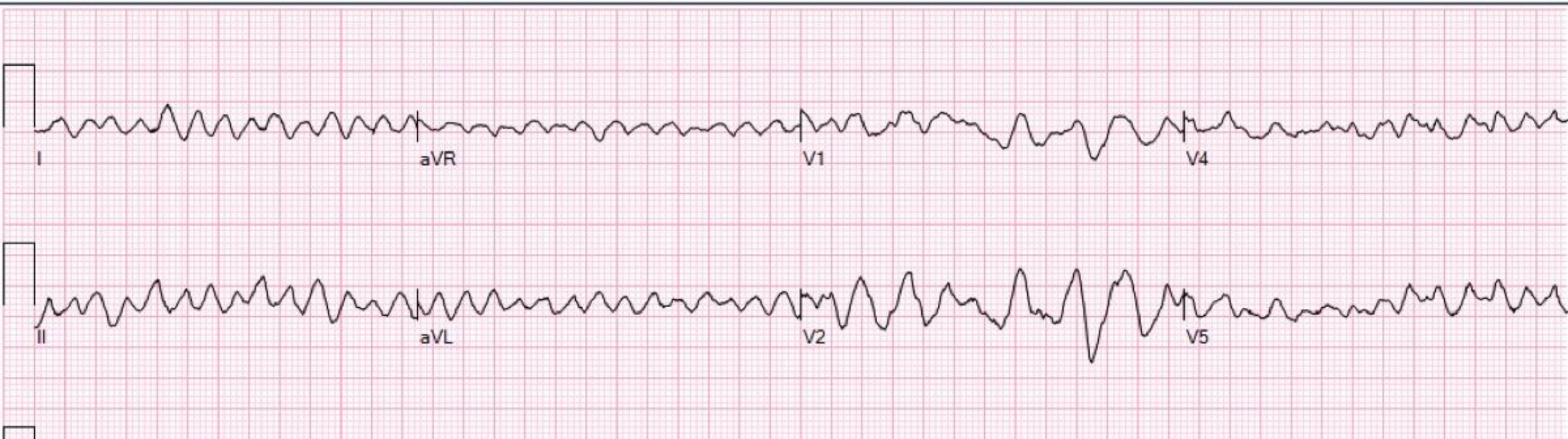
PUBLISHED BY ELSEVIER

FIGURE 5 Expected Outcomes in Patients on Ambulatory Inotropes



Fibrillation ventriculaire

Un choc électrique (défibrillation) est recommandé (sans trainer) !



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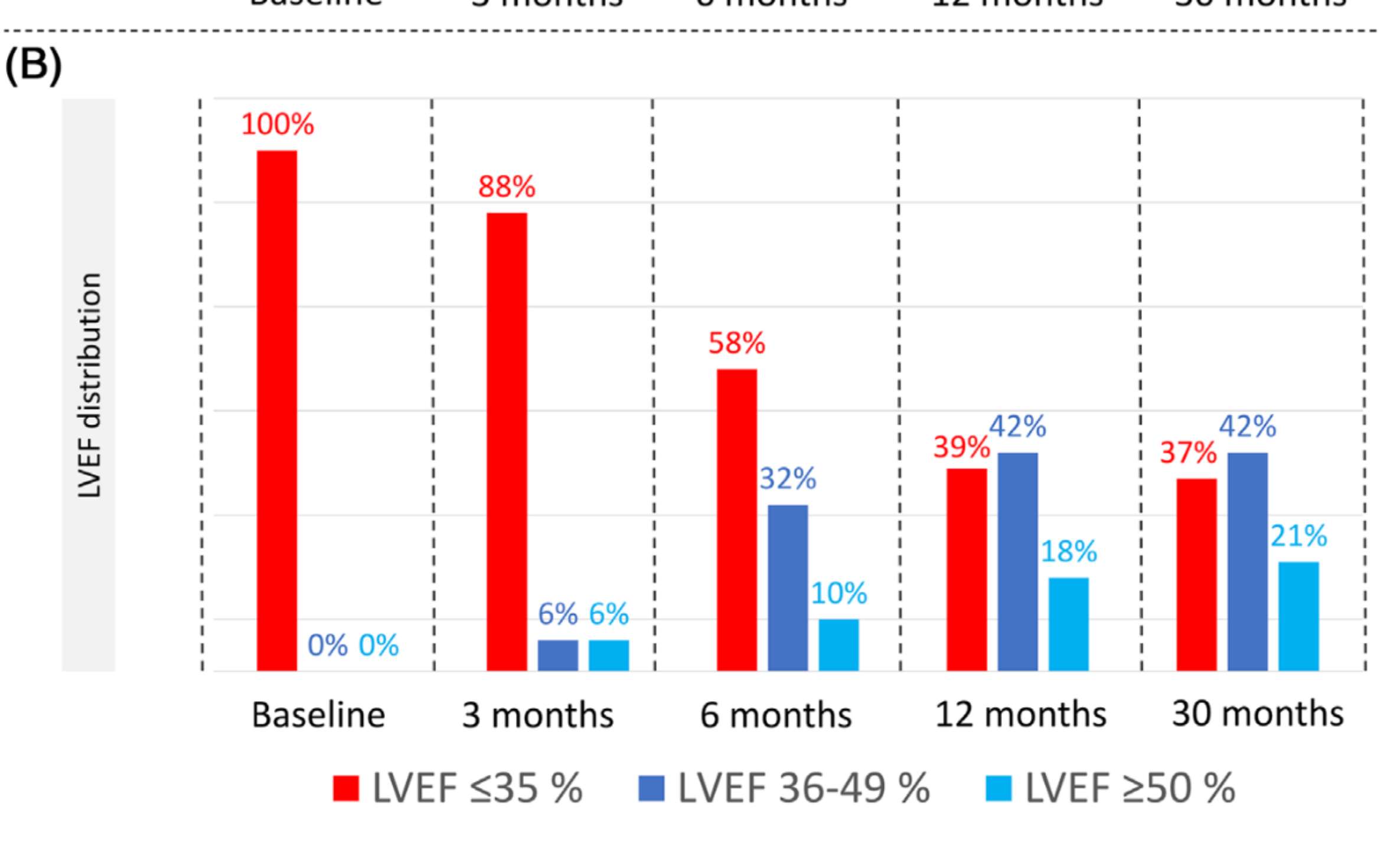
DOI: 10.1111/pace.14720

PACE WILEY

DEVICES

Survival, ventricular arrhythmia, and implantable cardioverter-defibrillator usefulness in toxic cardiomyopathy due to substance abuse

Nicolas Dognin MD | Goran Rimac MD | Guillaume Domain MD | Alexandre Cinq-Mars MD | Montse Massot MD | Pierre Yves Turgeon MD | Sacha-Michelle Dubois-Sénéchal PhD | Christine Bourgault MD | Joëlle Morin MD | Mathieu Bernier MD | Jonathan Beaudoin MD | Maxime Laflamme MD | Eric Charbonneau MD | Camille Strubé MD | Pierre Voisine MD | François Philippon MD | David Belzile MD | Mario Sénéchal MD


(B)
LVEF distribution
100%
0% 0%
88%
6% 6%
58%
32%
10%
39%
42%
18%
37%
42%
21%
Baseline
3 months
6 months
12 months
30 months
LVEF ≤35 %
LVEF 36-49 %
LVEF ≥50 %

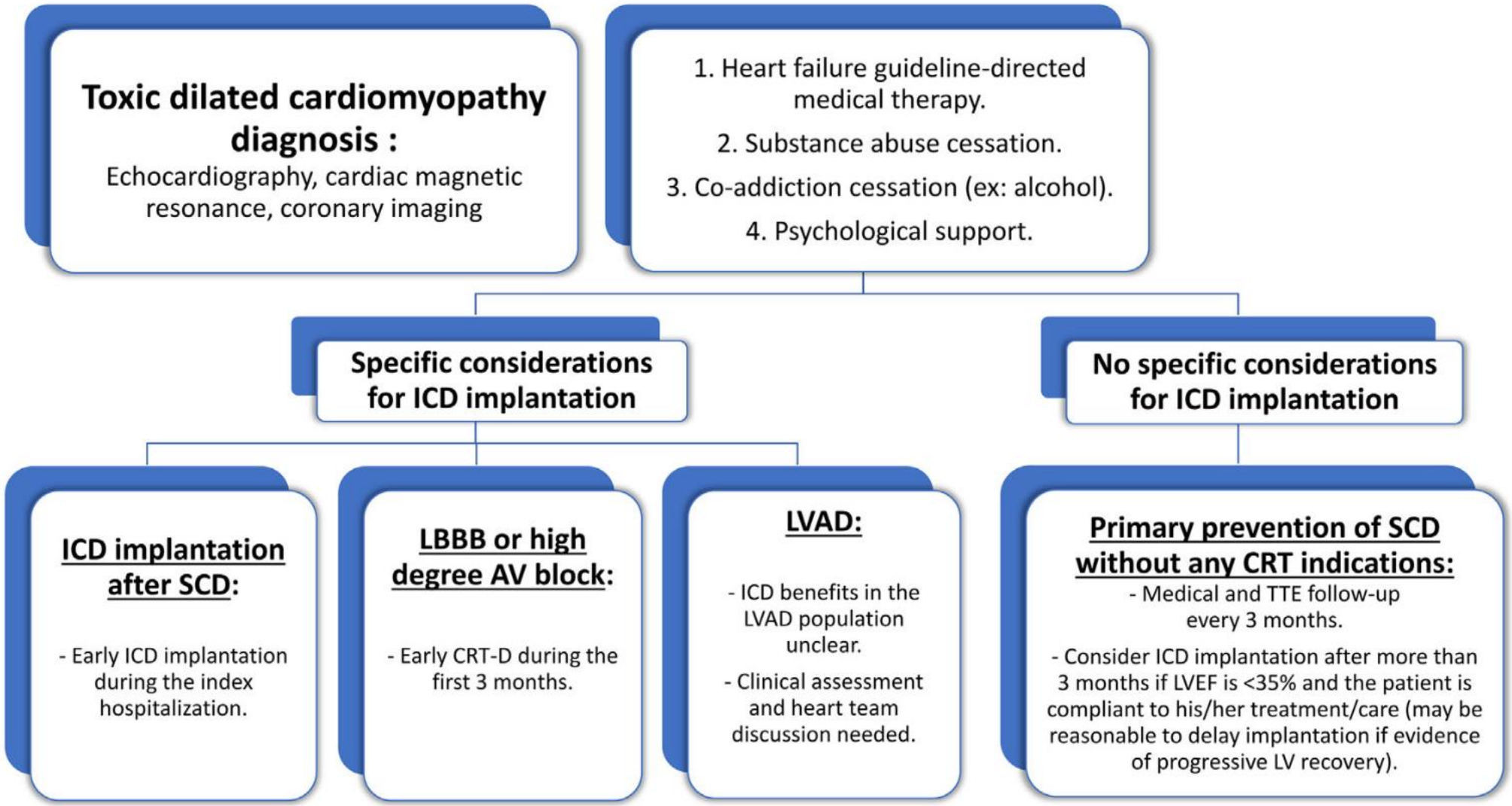
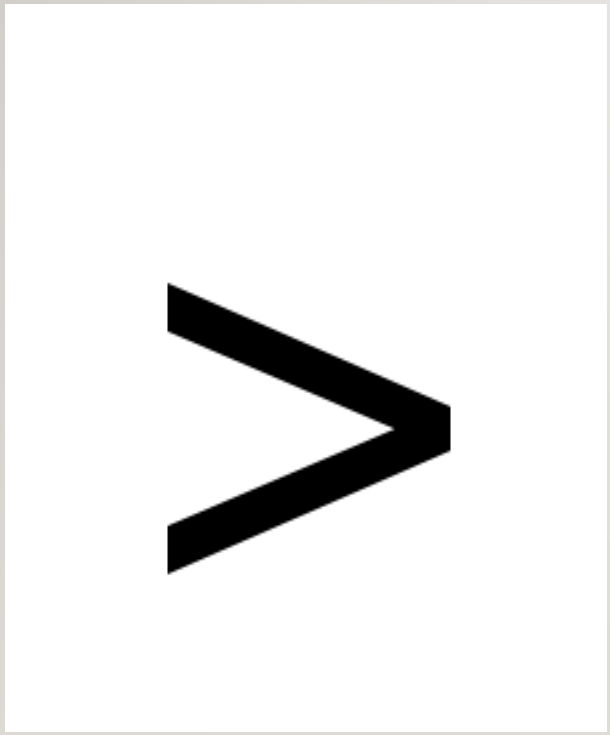
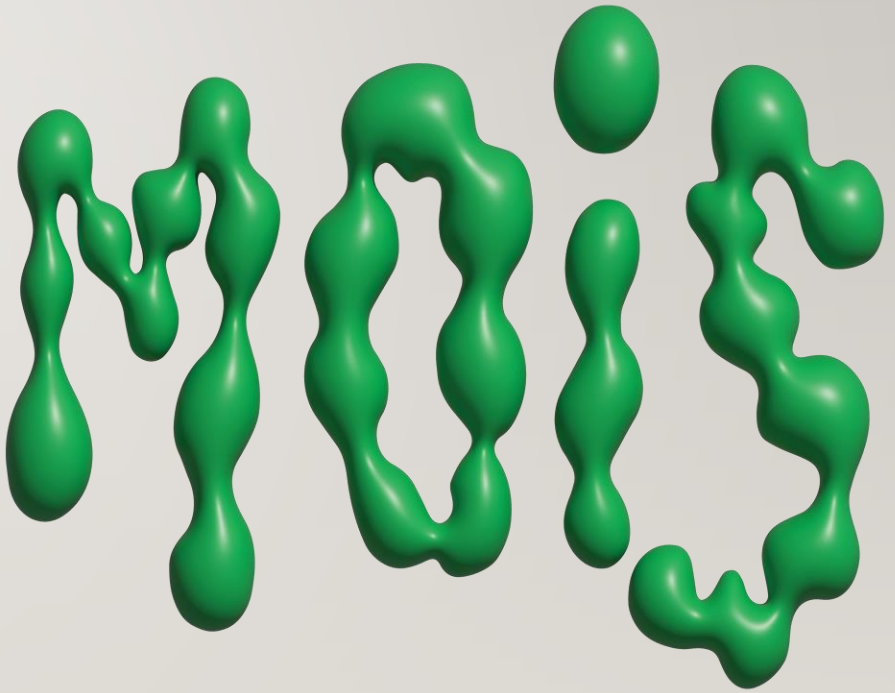
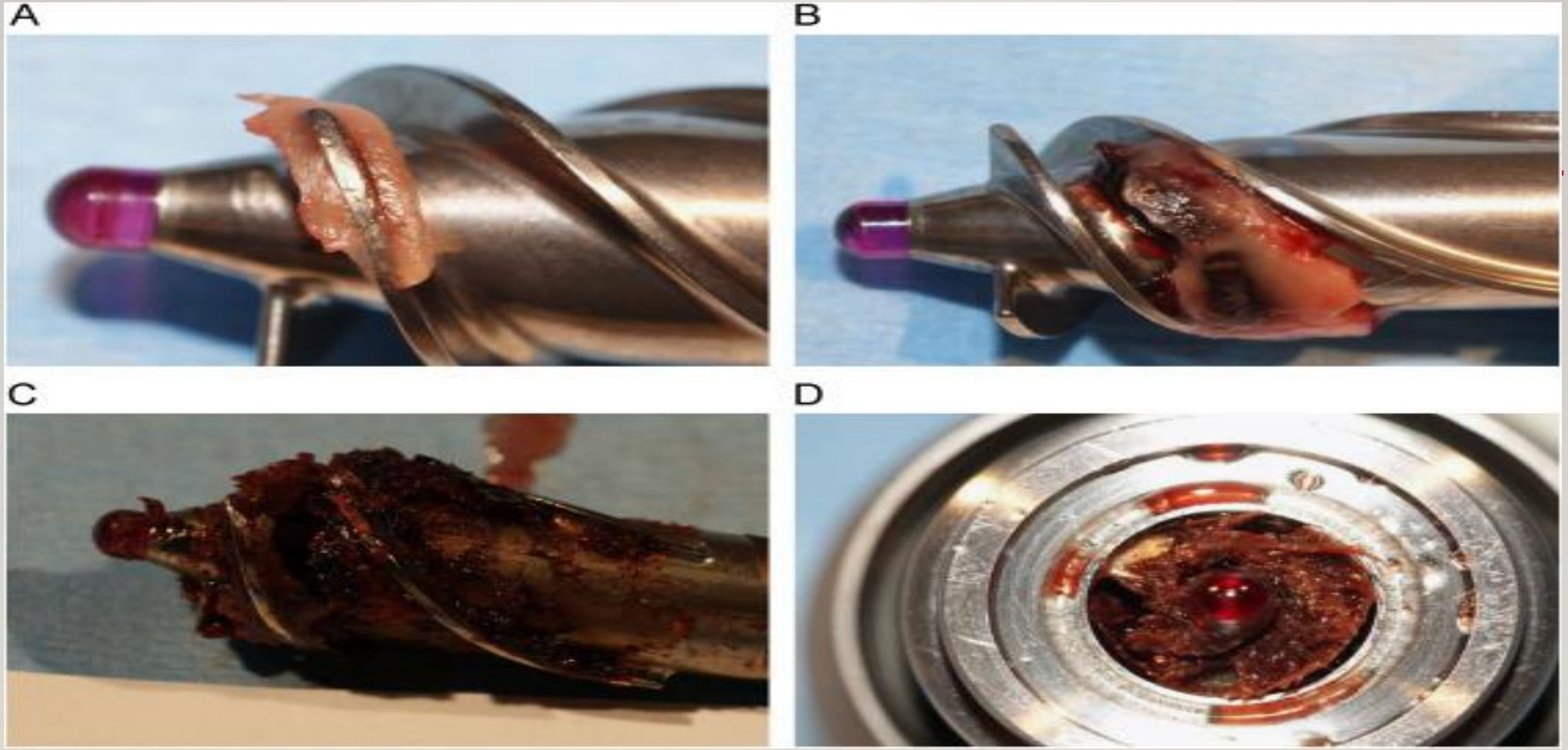


FIGURE 5 Prevention of sudden cardiac death in the T-DCM population. AVB, atrioventricular block; CRT, cardiac resynchronization therapy; ICD, implantable cardioverter defibrillator; LBBB, left bundle branch block; LVAD, left ventricular assist device; LVEF, left ventricular ejection fraction; RV, right ventricle; SCD, sudden cardiac death; TTE, transthoracic echocardiogram. [Color figure can be viewed at wileyonlinelibrary.com]

DÉFIBRILLATEUR CHEZ PATIENT AVEC CARDIOPATHIE TOXIQUE ?

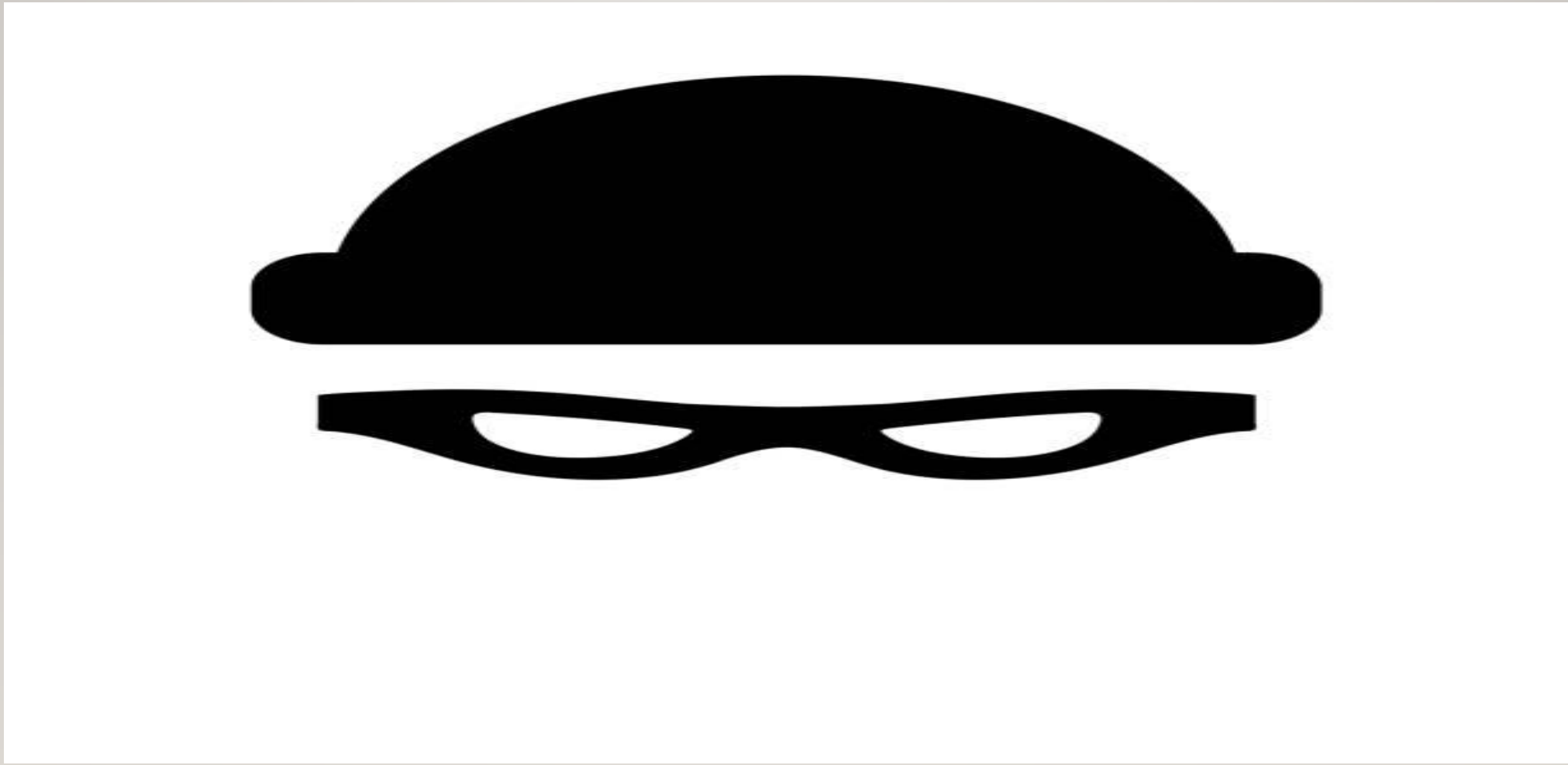





A
B
C
D

RÉCUPÉRATION / SEVRAGE / THROMBOSE ?


KEEP
RIGHT



Association of recreational drug consumption, cardiac toxicity and heart transplantation

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Anique Ducharme, MD, MSc

Accepted Sept. 28, 2018

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SUMMARY

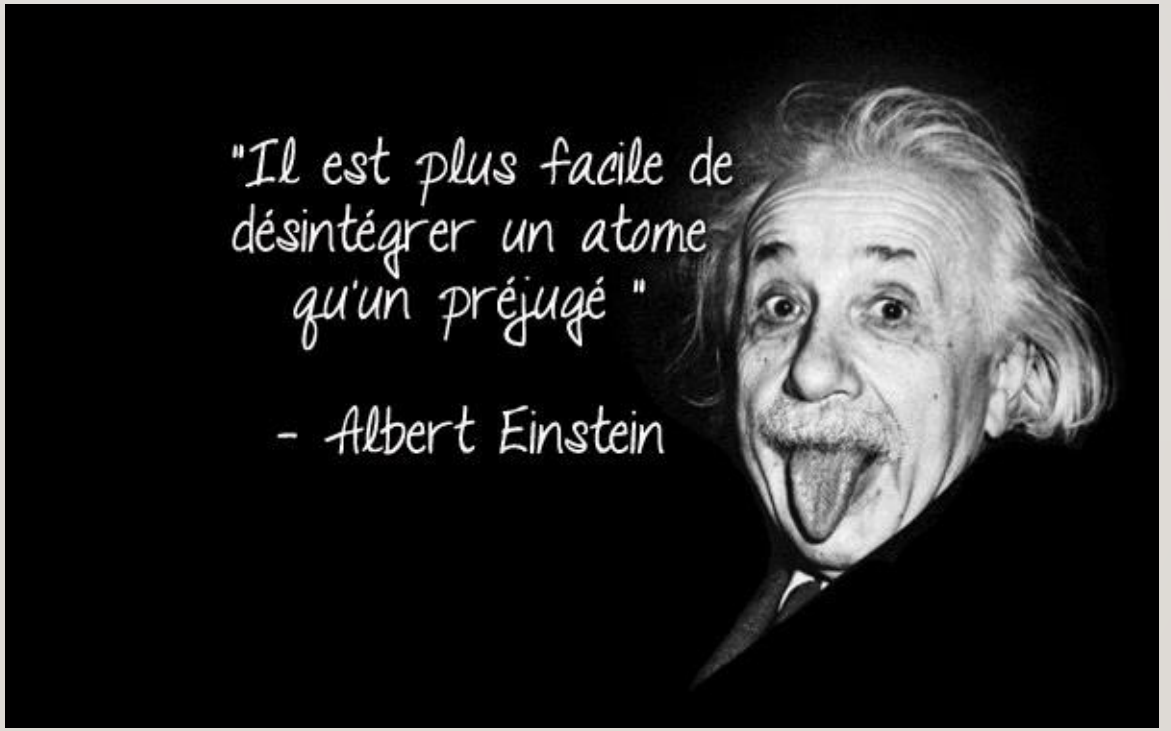
Cardiac toxicity from recreational drug use remains difficult to establish. We report the cases of 3 young patients who were hospitalized for cardiogenic shock. All were bridged to transplantation with implantation of a left ventricular assist device (LVAD). They underwent uneventful heart transplantation. The patients did not have any significant personal or family medical history, but all admitted consuming large quantities of recreational drugs daily. Histological examination of the native heart did not show any inflammation or infiltrative myocardial disease. In this series of young patients presenting in cardiogenic shock with minimal histologic findings on examination of the native hearts, the association between cardiac toxicity and active use of recreational drugs remains a strong possibility. The transplant community should be made aware of this possible association in the current era of legalization and social trivialization of drug consumption.

ET SI ON FINISSAIT PAR LA DÉBUT ?

AGENTS TOXIQUES ?

CARDIOPATHIE TOXIQUE / FRÉQUENCE / CHOC ?

CARDIOPATHIE TOXIQUE / POPULATION :



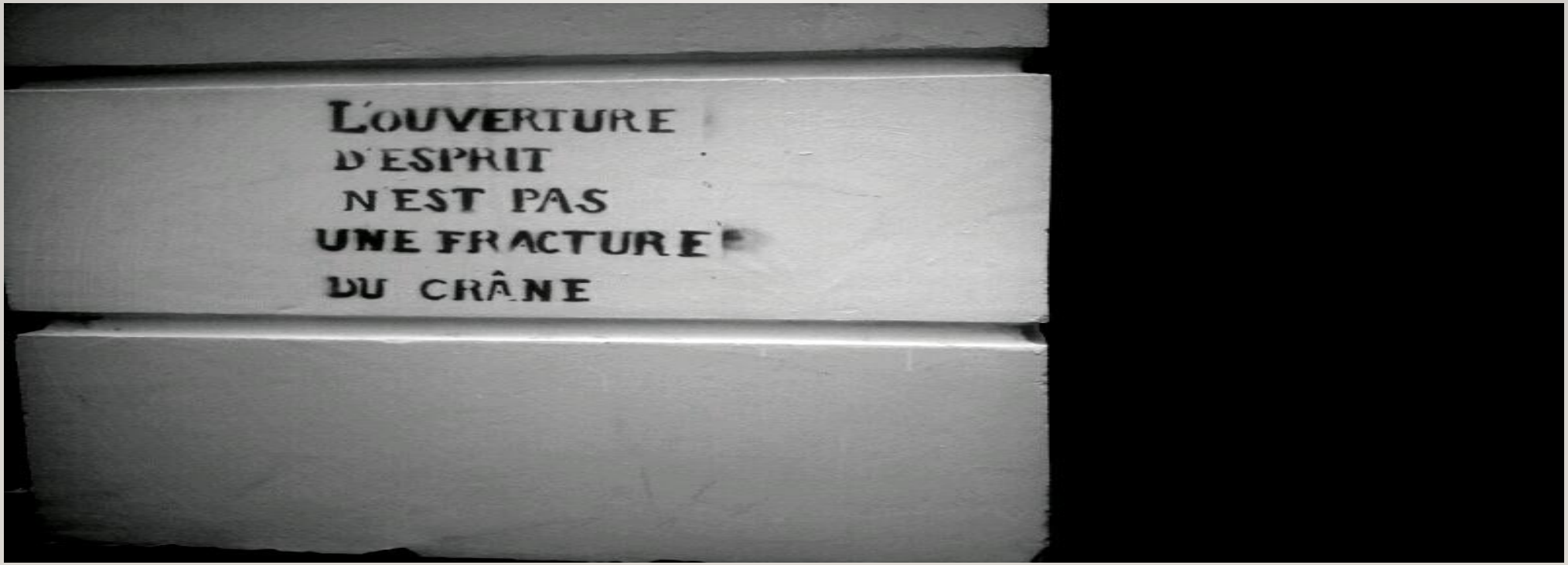
CARDIOPATHIE TOXIQUE / POPULATION ?

TRAITEMENTS ? 60% FE > 35 % , 70% ABSTINENCE !

QUE DOIT-ON RETENIR CONCERNANT LA CARDIOPATHIE AUX AMPHÉTAMINES ?

1. Si patient jeune (< 45 ans ?) et cardiopathie dilatée sans diagnostic, évoquer la possibilité d'une cardiopathie toxique aux amphétamines/autres
2. Si diagnostic probable, avoir une approche globale, multi-disciplinaire .
3. La récupération est lente et peut nécessiter une assistance ventriculaire . Référer si dysfonction sévère .

OUVERTURE POUR UNE PRISE EN CHARGE STRATÉGIQUE / TOTALE / MÉDICALE / PSYCHOLOGIQUE / SOCIALE !

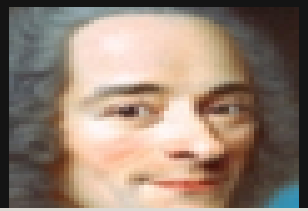



MISSION: IMPOSSIBLE

VOTRE RÉPONSE ?

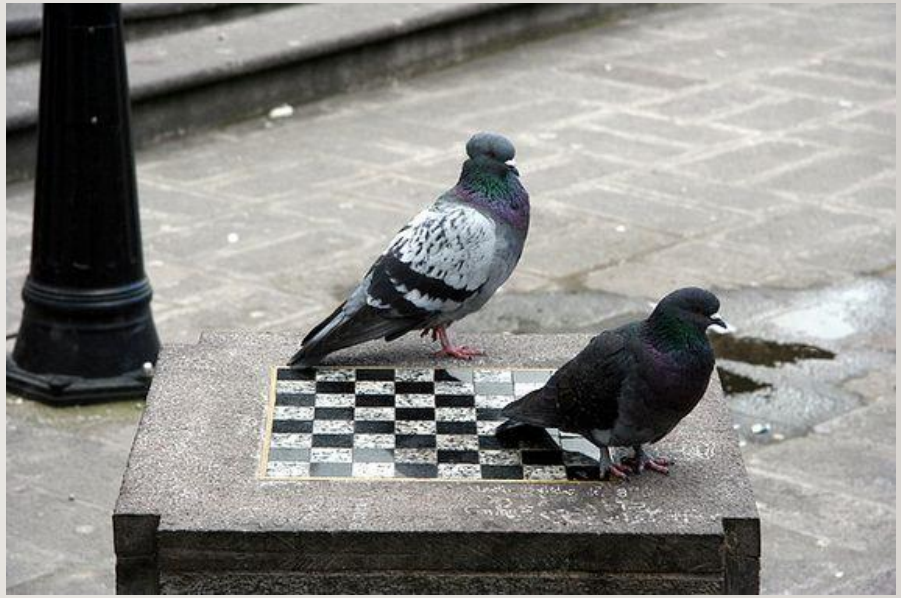
AMPHÉTAMINE ET RAISONNEMENT CLINIQUE ?

Le doute est un état mental désagréable, mais la certitude est ridicule.



Voltaire

Argumenter avec des imbéciles, c'est comme jouer aux échecs contre un pigeon. Peu importe votre niveau, le pigeon va juste renverser toutes les pièces, chier sur le plateau et se pavaner fièrement comme s'il avait gagné.



EN CAS D'ÉCHEC , ARGUMENTATION À PROPOS DE LA CARDIOPATHIE TOXIQUE ?

COLLABORATION / TRAVAIL D'ÉQUIPE /STRATÉGIE D'INTERVENTION :

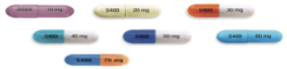
La victoire a cent pères, mais la défaite est orpheline.

(John Fitzgerald Kennedy)


Merci!

QUESTIONS ?

Guide de CADDRA pour les traitements pharmacologiques du TDAH au Québec – 2018

Type de molécule et illustration des comprimés	Caractéristiques	Durée d'action [1]	Posologie de départ [2]	Stratégie d'augmentation selon la monographie	Stratégie d'augmentation selon CADDRA www.caddra.ca	Couverture RAMQ (code)
PSYCHOSTIMULANTS À BASE D'AMPHÉTAMINES						
Dexédrine® comprimés 5 mg **Dexédrine®** spansule 10, 15 mg 	Comprimé écrasable [3] Spansule non écrasable	~ 4 h ~ 6 - 8 h	comprimé = 2.5 à 5 mg BID spansule = 10 mg die am	↑ 2.5 - 5 mg par pallier de 7J Dose max./J : (die ou BID) Tous âges = 40 mg	↑ 2.5 - 5 mg par pallier de 7J Dose max./J : (die ou BID) Enfant et adolescent = 20 - 30 mg Adulte = 50 mg	Couvert Couvert
Adderall XR® capsules 5, 10, 15, 20, 25, 30 mg 	Granules saupoudrables	~ 12 h	5 - 10 mg die am	↑ 5 - 10 mg par pallier de 7J Dose max./J Enfant = 30 mg Adolescent et adulte = 20 - 30 mg	Enfant : ↑5 mg par pallier de 7J Dose max./J = 30 mg Adolescent et adulte : ↑5 mg par pallier de 7J Dose max./J = 50 mg	Médicament d'exception Enfant-ado : (SN103) Adulte (SN132)
Vyvanse® capsules 10, 20, 30, 40, 50, 60, 70* mg 	Contenu de la capsule soluble dans l'eau, le jus orange et le yogourt	~ 13 - 14 h	20 - 30 mg die am	↑ à la discretion du médecin par pallier de 7J Dose max./J : Tous âges = 60 mg	↑ 10 mg par pallier de 7J Dose max./J : Enfant = 60 mg Adolescent et adulte = 70 mg	Médicament d'exception Enfant-ado : (SN103*) Adulte (SN132*)
PSYCHOSTIMULANTS À BASE DE MÉTHYLPHÉNIDATE						
Méthylphénidate courte action, comprimés 5 mg (générique) 10, 20 mg (Ritalin®) 	Comprimé écrasable [3]	~ 3 - 4 h	5 mg BID à TID adulte = considérer QID	↑ 5 - 10 mg par pallier de 7J Dose max./J : Tous âges = 60 mg	↑ 5 mg par pallier de 7J Dose max./J : Enfant et adolescent = 60 mg Adulte = 100 mg	Couvert
Biphentin® capsules 10, 15, 20, 30, 40, 50, 60, 80 mg 	Granules saupoudrables	~ 10 - 12 h	10 - 20 mg die am	↑ 10 mg par pallier de 7J Dose max./J : Enfant et adolescent = 60 mg Adulte = 80 mg	↑ 5 - 10 mg par pallier de 7J Dose max./J : Enfant = 60 mg Adolescent et adulte = 80 mg	Médicament d'exception Enfant-ado : (SN103) Adulte (SN132)
Concerta® comprimés à libération prolongée 18, 27, 36, 54 mg 	Comprimé (doit être avalé entier pour conserver le mécanisme de libération intact)	~ 12 h	18 mg die am	↑ 18 mg par pallier de 7J Dose max./J : Enfant = 54 mg Adolescent = 54 mg / Adulte = 72 mg	↑ 9 - 18 mg par pallier de 7J Dose max./J : Enfant = 72 mg Adolescent = 90 mg / Adulte = 108 mg	Médicament d'exception Enfant-ado : (SN103) Adulte (SN132)
Foquest® Capsules 25, 35, 45, 55, 70, 85, 100 mg 	Granules saupoudrables	~ 16 h	25 mg die am	↑ 10-15 mg par pallier de 5 J minimum Dose max/J : Adulte = 100 mg	↑ 10-15 mg par pallier de 5 J minimum Dose max/J : Adulte = 100 mg	Programme patient d'exception
NON PSYCHOSTIMULANT – INHIBITEUR SÉLECTIF DU RECAPTAGE DE LA NORADRÉNALINE						
Strattera[MD] (Atomoxetine) Capsules 10, 18, 25, 40, 60, 80, 100 mg 	Capsule (doit être avalée entière pour réduire les effets secondaire GI)	jusqu'à 24 h	Enfant et adolescent = 0.5 mg/kg/J Adulte = 40 mg Die X 7-14 J	Maintenir dose X 7 - 14 j avant d'ajuster : Enfant = 0.8 puis 1.2 mg/kg/J 70 kg ou Adulte = 60 puis 80 mg/J Dose max./J : 1.4 mg/kg/J ou 100 mg	Maintenir dose X 7 - 14 j avant d'ajuster : Enfant = 0.8 puis 1.2 mg/kg/J 70 kg ou Adulte = 60 puis 80 mg/J Dose max./J : 1.4 mg/kg/J ou 100 mg	Médicament d'exception Enfant-ado Patient d'exception Adulte
NON PSYCHOSTIMULANT – AGONISTE SÉLECTIF DES RÉCEPTEURS ALPHA-2A ADRÉNERGIQUES						
Intuniv XR® (Guanfacine XR) Comprimés à libération prolongée 1, 2, 3, 4 mg 	Comprimé (doit être avalé entier pour conserver le mécanisme de libération intact)	jusqu'à 24 h	1 mg die am ou en soirée	Maintenir dose X minimum 7J avant d'ajuster par palier ne dépassant pas 1 mg/semaine Dose max./J : En monothérapie : 6-12 ans = 4 mg, 13-17 ans = 7 mg En traitement d'appoint avec un psychostimulant : 6-17 ans = 4 mg	Maintenir dose X minimum 7J avant d'ajuster par palier ne dépassant pas 1 mg/semaine Dose max./J : En monothérapie : 6-12 ans = 4 mg, 13-17 ans = 7 mg En traitement d'appoint avec un psychostimulant : 6-17 ans = 4 mg	Médicament d'exception Enfant-ado Patient d'exception Adulte

Note : La taille réelle des comprimés et capsules n'est pas celle illustrée. Pour les informations spécifiques concernant l'introduction, l'ajustement et le changement de la médication pour le TDAH, les cliniciens sont invités à consulter le guide de pratique canadien en TDAH (www.caddra.ca). [1] La pharmacocinétique et la réponse pharmacodynamique varie d'un individu à l'autre. Le clinicien doit utiliser son jugement clinique pour évaluer la durée de l'effet cas par cas sans se fier uniquement sur les valeurs rapportées de durée de l'effet ou de courbes pharmacocinétiques. [2] Ces doses de départ sont tirées des monographies de produit. CADDRA recommande de débuter en général avec la plus petite posologie disponible. [3] Risque d'abus augmenté. * Vyvanse 70 mg est un dosage hors indication pour le traitement du TDAH au Canada. Au Québec, la RAMQ n'autorise PAS le remboursement de la capsule de 70 mg, alors que les autres posologies disponibles sont couvertes selon les critères du programme médicament d'exception. ***Document développé par Annick Vincent MD (www.attentiondeficit-info.com) et l'équipe de Direction des communications et de la philanthropie, Université Laval, avec la collaboration spéciale de CADDRA.***

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ADHD Medications and Serious Cardiovascular Events in Children and Youth

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Table 3. Adjusted Hazard Ratios for Individual Cardiovascular End Points, According to the Use of ADHD Drugs.*

End Point	Person-Yr	Events	Rate per 100,000 Person-Yr	Hazard Ratio (95% CI)†
	number			
Sudden cardiac death				
Nonuser	1,597,962	17	1.06	1.00
Former user	607,475	13	2.14	1.52 (0.65–3.56)
Current user	373,667	3	0.80	0.88 (0.23–3.35)
Acute myocardial infarction				
Nonuser	1,597,962	6	0.38	1.00
Former user	607,475	3	0.49	0.88 (0.16–4.71)
Current user	373,667	0	0	NA
Stroke				
Nonuser	1,597,962	26	1.63	1.00
Former user	607,475	9	1.48	0.80 (0.33–1.96)
Current user	373,667	4	1.07	0.93 (0.29–2.97)

RESULTS

Cohort members had 81 serious cardiovascular events (3.1 per 100,000 person-years). Current users of ADHD drugs were not at increased risk for serious cardiovascular events (adjusted hazard ratio, 0.75; 95% confidence interval [CI], 0.31 to 1.85). Risk was not increased for any of the individual end points, or for current users as compared with former users (adjusted hazard ratio, 0.70; 95% CI, 0.29 to 1.72). Alternative analyses addressing several study assumptions also showed no significant association between the use of an ADHD drug and the risk of a study end point.

CONCLUSIONS

This large study showed no evidence that current use of an ADHD drug was associated with an increased risk of serious cardiovascular events, although the upper limit of the 95% confidence interval indicated that a doubling of the risk could not be ruled out. However, the absolute magnitude of such an increased risk would be low. (Funded by the Agency for Healthcare Research and Quality and the Food and Drug Administration.)

Prescription Amphetamine Use Associated With Acute Cardiomyopathy

Christopher J. Bitetzakis, William Mazalewski, Jaymin Patel, Allan Chen; University of South Florida, Tampa, FL

An 18-year-old male with a past medical history significant for Attention Deficit Hyperactivity disorder (ADHD) presented with chest pain and shortness of breath. He reportedly took four times the amount of lisdexamphetamine as normally prescribed, 160 mg total. He had no other history of illicit drug, tobacco, or alcohol abuse. On physical examination he was anxious appearing and his blood pressure was 188/98 mmHg, HR 65 bpm, and saturating 99% on room air. Urinary drug screen was positive for amphetamines. Due to overdose protocol, he was admitted to the ICU where his respiratory status acutely decompensated necessitating emergent intubation. Chest radiograph revealed diffuse bilateral interstitial opacities. Sinus tachycardia with inferior-lateral ST depressions were noted on his ECG. Troponin I peaked at 0.481 ng/mL. An emergent transthoracic echocardiogram revealed an EF of 15-20% with mid-ventricular severe hypokinesis, basal inferior/lateral dyskinesis, and sparing of the apex. Diastology was consistent with grade II dysfunction. A diagnosis of stress-induced cardiomyopathy secondary to prescription amphetamine overdose was made. Repeat transthoracic echocardiogram at 48 hours revealed a recovering ejection fraction of 45-50% with mild global hypokinesis. He was discharged and lost to follow up thereafter.